United Nations Convention on the Law of the Sea SPLOS/240

Meeting of States Parties

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Twenty-second Meeting
New York, 4-11 June 2012

Curricula vitae of candidates nominated by States Parties for election to the Commission on the Limits of the Continental Shelf

Note by the Secretary-General

1. The Secretary-General has the honour to submit the curricula vitae of the candidates nominated by States Parties for the election of 21 members of the Commission on the Limits of the Continental Shelf for a five-year term beginning on 16 June 2012 (see annex). The names and nationalities of the candidates are as follows:

Mohammad bin Hamid Al-Harbi (Saudi Arabia)
Muhammad Arshad (Pakistan)
Mario Juan A. Aurelio (Philippines)
Lawrence Folajimi Awosika (Nigeria)
Galo Carrera (Mexico)
Francis L. Charles (Trinidad and Tobago)
Ivan F. Glumov (Russian Federation)
Richard Thomas Haworth (Canada and United Kingdom of Great Britain and Northern Ireland)
Martin Vang Heinesen (Denmark)
Emmanuel Kalngui (Cameroon)
Lu Wenzheng (China)
Mazlan Bin Madon (Malaysia)
Estevao Stefane Mahanjane (Mozambique)
Jair Alberto Ribas Marques (Brazil)
Simon Njuguna (Kenya)
Isaac Owusu Oduro (Ghana)
Yong Ahn Park (Republic of Korea)
Carlos Marcelo Paterlini (Argentina)
Sivaramakrishnan Rajan (India)
Walter R. Roest (Netherlands)
Luis Somoza Losada (Spain)
Nguyen Nhu Trung (Viet Nam)
Tetsuro Urabe (Japan)

2. Information concerning the nominations and the election is contained in documents SPLOS/238 and SPLOS/239 and Add.1.

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Annex

Curricula vitae of candidates*

Mohammad bin Hamid Al-Harbi (Saudi Arabia)

Position:

Director General of Marine Surveying at Saudi Arabia's General Directorate for Marine Geodesy

Education:

1. M.S. Geodesy and Applied Marine Science, Plymouth University, United Kingdom.
2. Diploma, Marine Surveying, the Marine College of Taiwan.
3. Diploma, Marine Law, Rhodes International Academy.
4. B.S. Geology and Earth Science, King Abdulaziz University.
5. Received ample training on research ships.

Work Experience:

1. Director of Marine Survey and Science.
2. Member of the Advisory Committee for Marine Science Research.
3. Secretary of the Advisory Committee for Marine Science Research.
4. Member of the Technical team of Marine Boundaries.
5. Representative of the Ministry of Defense and Aviation in Standing Committee for the Law of the Sea, in the Ministry of Foreign Affairs.
6. Member of the Saudi delegation to State party meetings of the Technical Committee of the International Organization for Standardization.
7. Member of the Saudi Geological Surveyors' Society.
8. A Former Colonel in the General Directorate of Military Surveying.
9. Lecturer in the Institute of Military Surveying.

* Curricula vitae are issued without formal editing.

Muhammad Arshad (Pakistan)

Present Position	Hydrographer Pakistan Navy
Date of Birth	08/02/1963
Language	English and Urdu

Academic Background

- B.Sc in Naval Sciences
- Pakistan Naval Engineering College for Advance Studies.
- Professional Courses at Naval Training Establishment.
- Masters in Strategic Studies.

Ocean Sciences Professional Qualifications

- Post Graduate Diploma Hydrographic Surveying from Plymouth University — United Kingdom
- Advance Survey Course (Long-H) — United Kingdom
- Physical Oceanography Course — Japan
- Electronic Navigation Chart Production (CARIS) — Netherlands
- Attended international course on UNCLOS Article 76 regarding Extension of Continental Shelf at NOC, Southampton, United Kingdom
- Course on Maritime Boundary Delimitation under IBRU at Singapore

Appointments and Distinguished Posts

2009-to date:	Commodore Hydrographer Pakistan Navy and Coordinator NAVAREA IX.
2006-2008:	Commanding Officer Survey Vessel
2004-2005:	Deputy Hydrographer
2003-2004:	Executive Officer and Senior Surveying Officer Survey Vessel

Member — National Maritime Forums

- Member of National Oceanographic Commission
- Member of Central and Zonal Light Houses Advisory Committee
- Member of National Committee of Geodesy and Geophysics
- Member of the Board of Governors of National Institute of Oceanography (NIO)
- Member of the Committee on Earth Observations Programme, SUPARCO

Member — Pakistan International Representation

- Coordinator NAVAREA IX
- International Hydrographic Organization

- International Association of Hydrogological Sciences (IAHS)
- North Indian Ocean Hydrographic Commission (NIOHC)
- ROPME Sea Area Hydrographic Commission
- Member Pakistan Technical Committee on Maritime Boundary Delimitation
- Technical Member on UNCLOS-82 to the Defense Ministry
- Member IHO working Group S-23 (naming on limit of seas and oceans)

Ocean Related Activities and National Responsibilities

- Responsible for the timely availability of International Nautical Charts Series/associated Navigation Publications of Pakistan under IHO and Government directives
- As coordinator NAVAREA IX responsible for the prompt promulgation of Maritime Safety Information (MSI) and radio navigation warnings in North Indian Ocean, Persian Gulf and Red Sea
- Adviser to Federal Government in demarcation of maritime zones, boundaries and Pakistan Baseline affairs
- Assisting Federal Government. in hydrographic surveys of areas under the legal jurisdiction of Pakistan through planning and execution of hydrographic surveys
- Responsible for establishment of Geodetic Network along Pakistan coast and promulgation of Chart Datum
- Conduct Hydrographic and Oceanographic research surveys and studies of Pakistani waters for ties, tidal streams, currents, nature of seabed, wave motion, ocean climatology, bathymetry and submarine conditions
- Render assistance in Physical, Chemical, Biological and Geological Oceanographic research
- Assisting Federal Government in carrying out surveys within the Exclusive Economic Zone for exploration and exploration of natural resources (both living and non-living) and assistance of national scientists
- Local and marketing of wrecks and navigational hazards for the safety of ships

UNCLOS Related Work

- Attended International course on UNCLOS Article 76 regarding Extension of Continental Shelf at NOC, Southampton, United Kingdom
- Appraised Authorities on the aspects of Article 76 and pioneer member of the Pakistan Continental Shelf project
- Member Technical Committee Extension of Continental Shelf Project
- Technical member in hydrographic, geodetic, maritime boundary and baseline matters in Pakistan continental shelf submission
- Advising Federal Government in Pakistan post submission matters
- Advising Federal Government with regard to scientific surveys in Pakistan Maritime Zones

Major/International Surveys

2007 — Organize and carried out hydrographic project at part of Salala Oman with Omani Authorities onboard. Process the survey results and produced fair sheets.

2007 — Carried out hydrographic surveys at approaches to Jeddah port

2007 — Carried out joint survey with India at Sir Creek

Professional activities

- Carried out various bathymetric/marine surveys, survey planning, field work, position control, hydrographic data logging and post survey work as surveying officer
- In charge team established geodetic network along Pakistan coast
- Carried out various scientific and seismic research cruise onboard involved in scientific analysis and ocean data processing
- Planning and execution of various hydrographic surveys for the Pakistan coastal naval port
- Forecast survey requirement, appraisal at HQs level and tasking of survey assets
- Major survey acquisitions, survey training and induction of personnel

Conventions, conferences, meetings

International meetings

2005 Maritime boundaries meeting in New Delhi, India

2006 Maritime boundaries meeting in Islamabad, Pakistan

2010 NESA seminar in Washington D.C., United States of America

2010 NIOCH meeting in Dhaka, Bangladesh RSAHC

2011 Meeting at Musqat

Awards and Achievements

Chief of Naval Staff letter of commendation

Fleet Safety Award

Mario Juan A. Aurelio (Philippines)

BSc Geology

MSc Geodynamics of Oceans and Continents

PhD Structural Geology and Tectonics

Post Doc1 Deep Offshore Tectonic Studies

Post Doc2 Geodynamics by Space Geodesy and Seismotectonics

2001-Present:	Member, Philippine Extended Continental Shelf Technical Working Group
2011 Judge:	Imperial Barrel Award, Asia-Pacific Region Competition, AAPG
2009-10	Grantee: Professorial Chair for Petroleum Energy Research, Pearl Energy Ltd.
2006	Professional Geologist of the Year, Professional Regulation Commission
2005	Outstanding Young Scientist, National Academy of Science and Technology
1999	Achievement Award, National Research Council of the Philippines
1998	Outstanding Laoageño Award for Science, City Government of Laoag
1992	Special Distinction Award (PhD Dissertation), Centre National de Recherches Scientifiques, France
1985	Leopoldo Faustino Award (Geology Board Exam First Placer)

Membership and Participation in United Nations-affiliated commissions/agencies/organizations

Philippine Representative, Commission on the Geological Map of the World CGMW, under the auspices of UNESCO in Paris, France (2005-present)

Philippine Representative, Sub-Commission for Asia, CGMW-UNESCO, Beijing, China (2005-Present)

Co-author, 1:5M International Geological Map of Asia, under CGMW Sub-commission for Asia

Scholar/Fellow, International Atomic Energy Agency (2005 Hungary, 2008 Czech Republic, 2009 South Korea)

Philippine Representative, International Union of Geological Sciences — IUGS (2004-present)

Employment

Associate Professor
National Institute of Geological Sciences
College of Science
Laboratory Function: Head, Structural Geology and Tectonics Laboratory

University of the Philippines
Diliman, Quezon City
Administrative Function: Deputy Director for Resources and Facilities

Personal details

Languages:	English, French, Filipino – fluent (spoken/written)
	Spanish – basic knowledge

Education and training

2009	**IAEA Fellow**
	Granting Agency: International Atomic Energy Agency (IAEA), Vienna, Austria
	School: International: Nuclear Safety School, Korea Institute of Nuclear Safety
	Field: Safety assessment for radioactive waste disposal facilities
2008	**IAEA Fellow**
	Granting Agency: Energy Agency (IAEA), Vienna, Austria
	Training Agency: Czech University of Life Sciences, Prague
	Field: Solute transport / fluid flow modelling by HYDRUS
2005	**IAEA Fellow**
	Granting Agency: International Atomic Energy Agency (IAEA), Vienna, Austria
	Training Agency: Hungarian Atomic Energy Agency, Hungary
	Field: Radioactive Waste Management Geotechnologies
2000	Visiting Scientist /Professor (European Union Fellow)
	Ecole Normale Supérieure de Paris Paris, France
	Programme: DOTS-SEA Deep Offshore Tectonic Studies in Southeast Asia
1994-1995	Post-Doctoral Fellowship Grant (European Union Fellow)
	Université Pierre et Marie Curie, Paris France and Institut füer Angewandte Geodäsie, Frankfurt, Germany
	Specialization: Geodynamics through Space Geodesy and Seismotectonics
1989-1992	PhD in Structural Geology and Tectonics
	Université Pierre et Marie Curie, Paris, France

	Dissertation: Tectonique du segment central de la faille philippine: étude structurale, cinématique et évolution géodynamique
1988-1989	DEA (MSc) in Geodynamics of Oceans and Continents
	Université Pierre et Marie Curie, Paris, France
	Work area: French Alpine region
	Thesis: La faille philippine: un exemple de décrochement à l'arrière d'une zone de subduction
1985	Philippine Geology Board Exam 1st Place
	Professional Regulation Commission, Manila
1981-1985	BSc Geology
	University of the Philippines, Diliman, Quezon City
Teaching	
2007-present	Associate Professor
	National Institute of Geological Sciences
	University of the Philippines, Diliman, Quezon City
	Courses handled:
	• Advance Structural Geology (Lecture+Laboratory) — M.S. programme
	• Structural Geology (Lecture+Laboratory) — BS programme
	• Geology and Tectonics of the Philippines and Southeast Asia — BS programme
	• The Dynamic Earth — BS programme
Oct.-Nov. 2010	**Visiting Academic (Professor)**
	Petroleum Geoscience Programme
	Faculty of Science
	Universiti Brunei Darussalam
	Subject handled
	• Tectonics and Structural Geology (40 hrs)
May-June 2000	**Visiting Scientist/Professor (EU Fellow)**
	Ecole Normale Supérieure de Paris Paris, France
	Research undertaken:
	• DOTS-SEA Deep Offshore Tectonic Studies of Southeast Asia (Philippine component)
1992-2006	**Professorial Lecturer II to III**

National Institute of Geological Sciences

University of the Philippines, Diliman, Quezon City

Courses Handled:

- Advance Structural Geology (Lecture+Laboratory)
- Structural Geology (Lecture+Laboratory)

1999-2006 **Professor 2 (Part Time)**

School of Graduate Studies and School of Earth and Materials Science and Engineering

Mapua Institute of Technology, Manila

Courses Handled:

- Earthquake Geology and Engineering — M.S. programme
- Environmental Geotechnics — M.S. programme
- Structural Geology (Lecture+Laboratory) — B.S. programme
- Geology and Tectonics of the Philippines and Southeast Asia — B.S. programme
- Physical Geology — B.S. programme
- Introduction to Geophysics — B.S. programme

Competence in Relevant Software

- The Kingdom Suite — seismic interpretation
- Leapfrog — 3-D geological modelling
- Fledermaus — bathymetric modelling
- Caris Lots — bathymetric analysis (basic knowledge)

Honours, Prizes and Awards

Professional Geologist of the Year, 2006

Professional Regulation Commission

Outstanding Young Scientist Award, 2005

National Academy of Science and Technology

Achievement Award, 1999

National Research Council of the Philippines

Outstanding Laoageño Award, 1998

City Government of Laoag, Philippines

Special Distinction Award, 1992

Centre National de Recherches Scientifiques, France

Très Honorable 1992 avec Felicitations du Jury

Highest citation in a Ph.D. dissertation:

Universite Pierre et Marie Curie, Paris, France

Leopoldo Faustino Award 1985 Board Exam Topnotcher

Professional Regulations Commission, Manila and Geological Society of the Philippines

Best Paper, 2009 (One of 3)

Geological Society of the Philippines (GEOCON2009)

Best Paper, 1999

Geological Society of the Philippines (GEOCON99)

Best Paper, 1998

Geological Society of the Philippines (GEOCON98)

Best Paper, 1994

Geological Society of the Philippines (GEOCON94)

Special Paper, 2002

Mines and Geosciences Bureau Technical Seminar

Best Paper in Geology, 2000

Mines and Geosciences Bureau Technical Seminar

Best Paper in Geology, 1993

Mines and Geosciences Bureau Technical Seminar

Best Paper in Geology, 1990

Mines and Geosciences Bureau Technical Seminar

Office/Membership in Professional Societies

Judge (2011 Regional IBA Competitions)

Association of American Petroleum Geologists (AAPG)

Member

Association of American Petroleum Geologists (AAPG)

Associate Member (since 1992)

Société Géologique de France (SGF)

Member (since 2007)

Society of Economic Geologists (SEG)

Member (since 2005)

Outstanding Young Scientists, Inc. (NAST)

Ex-Officio Director (2003)

Geological Society of the Philippines (GSP)

Vice-President (2003)

University of the Philippines Geology Alumni Association (UPGAA)

President (2002)

Geological Society of the Philippines (GSP)

Director (2002)

University of the Philippines Geology Alumni Association (UPGAA)

Vice-President (2001)

Geological Society of the Philippines (GSP)

Director (1993-97, 1999-2000, 2007-2008)

Geological Society of the Philippines (GSP)

Member (since 1993) –Awardee (1999)

National Research Council of the Philippines (NRCP)

Founding Member (since 2001)

Philippines-France Professionals Association (PFPA)

Lieutenant Commander (Since 1999)

Philippine Coast Guard Auxiliary (PCGA)

Member (since 1985)

University of the Philippines Alumni Association (UPAA)

Member (since 1985)

University of the Philippines Geology Alumni Association (UPGAA)

Reviewer (since 1998)

Philippine Environmental Impact Assessment System (DENR)

Fellowships, Grants and Scholarships

Professorial Chair Grant in Petroleum Energy Research, 2010

Pearl Energy Limited (Singapore)

Professorial Chair Grant in Petroleum Energy Research, 2009

Pearl Energy Limited (Singapore)

Fellowship Award in Nuclear Energy Studies, 2009

(Safety Assessment in Radioactive Waste Repositories)

International Atomic Energy Agency, Vienna, Austria (South Korea)

Fellowship Award in Nuclear Energy Studies 2008

(Groundwater Modeling for Radioactive Waste Repositories)

International Atomic Energy Agency, Vienna, Austria (Czech Republic)

Fellowship Award in Nuclear Energy Studies 2005

(Geotechnics for Radioactive Waste Repositories)

International Atomic Energy Agency, Vienna, Austria (Hungary)

Post Doctorate Fellowship Award in Deep Offshore Tectonics Studies 2000

Ecole Normale Superieure de Paris, France

Post Doctorate Fellowship Award in Space Geodesy and Seismotectonics 1994

European Union DG XII, Brussels, Belgium

Doctorate Scholarship Award in Structural Geology and Tectonics 1989

Université Pierre et Marie Curie, Université de Paris, France

Master's Scholarship Award in Geodynamics of Continents and Oceans 1988

Université Pierre et Marie Curie, Université de Paris, France

Editorial Work

Associate Editor (Present)	Science Diliman
Editor-in-Chief (1999-2003)	Journal of the Geological Society of the Philippines (JGSP)
Guest Editor (1997)	Journal of Southeast Asian Earth Sciences (Pergamon Press — ISI)
Editorial Board (1999-2007)	SYLVATROP: Technical Journal of Philippine Ecosystems and Natural Resources
Associate Editor (2001-Present)	L'Association (Newsletter of the Philippines-France Professionals Association)

Publications

Over 175 scientific papers published (books, theses, dissertations, articles) and reports written (list upon request)

Conference Presentations

Over 150 papers presented in conferences, seminars, workshops in over 15 countries (list upon request)

Lawrence Folajimi Awosika (Nigeria)

Occupational objectives

A professional position of challenge where my knowledge in Oceanography, Marine Geology/Geophysics, Hydrography, Land Ocean Interactions, Coastal and Marine Management in general and project management can be fully utilized.

Personal information

Date of birth: 27 July 1949
Place of birth: Ondo, Ondo State, Nigeria

Education

Aquinas College Akure Ondo State Nigeria 1964-1968
West African School Certificate Grade 1.

Howard University Washington, D.C., United States of America 1974-1977
B.Sc. Geology G.P.A., 3.36 Cum Laude

George Washington University Washington, D.C., USA 1978-1980
M.Sc. Geology 1980
Emphasis: Geophysics, Sedimentology, Stratigraphy, Field Geology and Geochemistry
Research: Seismic and Gravity Survey of Triassic Sediments in Arcola Quadrangle, Virginia, USA
Thesis: "Magnetic Survey of Basalt Flows in Remington Quadrangle, Virginia, USA

University of Obafemi Awolowo Ile Ife.
PhD. Applied Geophysics 2005
Thesis: Geophysical Survey of Avon Canyon in the Western Nigeria Continental Shelf.
Emphasis: Seismic interpretation and continental shelf transport/circulation dynamics and coastal area implications

Post-graduate training

Diploma, Marine Geophysics
Spanish Institute for Oceanography, Fuengirola, Malaga, Spain, June to Oct 1985

Course on Ocean Waves and Tides
International Center for Theoretical Physics
Trieste, Italy. Sept. 26-Oct. 28, 1988

Seventh Sea Level Training Course
Proudman Oceanographic Laboratory, Merseyside Bidston United Kingdom
12-30 June 1989. Course organized by the Intergovernmental Oceanographic Commission (IOC) of UNESCO for Global Sea Level Observing System (GLOSS)

Five-month work study at Dept of Oceanography, University of Southampton, United Kingdom, Oct. 1990 to March 1991 ("Sediment transport dynamics of the western Nigerian Continental Shelf")

Certificate of Achievement for successfully completing Mobil/Nigeria OIL MAP Training course May 1998

Professional awards

Best NIOMR Scientist 1999

Commander — Federal Republic of Equatorial Guinea. Merit award by the President of Equatorial Guinea for outstanding services during the Nigeria/ Equatorial Guinea Maritime Boundary Negotiations, 2002

Professional Merit Award of Excellence, 2004: Fisheries Soc'ety of Nigeria

Intergovernmental Panel on Climate Change (IPCC) Award presented for contributing to the award of the NOBEL PEACE PRIZE for 2007 to the IPCC

Emeritus member of the United Nations Joint Group of experts on the Scientific Aspects of Marine Protection (GESAMP), 10 May 2011

Intergovernmental Oceanographic Commission (IOC) of UNESCO Medal of Excellence in Oceanography. Awarded at the UNESCO Headquarters Paris on 22 June 2011

Affiliations

American Geophysical Union

Association of American Petroleum Geologist

Nigerian Association of Petroleum Explorationists

Geological Society of Nigeria

Association of Oceanographers

Nigerian Association of Oceanographers

International Coastal and Ocean Organization

Employment chronology

Washington Metropolitan Area
Transit Authority (METRO)
Washington, D.C., U.S.A., Dec. 1972 to Dec. 1977
Involvement: Maintenance Shop Mechanic, Later Assistant Foreman Mechanic Workshop, Bladensburg Road, Washington, D.C., USA

Howard University Washington D.C., U.S.A., Jan. 1976 to April 1977
Involvement: Graduate Assistant (Sedimentation and Physical Geology).

University of Maryland
College Park, Maryland, U.S.A., Dec. 1977 to A pril 1978
Involvement: Laboratory Instructor — Physical Geology

Howard University
Washington, D.C, U.S.A., Aug. 1980 to Dec. 1981
Involvement: Lecturer — Geophysics and Environmental Geology

Nigerian Institute for Oceanography and Marine Research (NIOMR) P.M.B.12729
Victoria Island Lagos.
21 March 1983 to present
Present position: Director

Responsibilities

Director and Head of Department of Marine geology/geophysics

Project leader: Geological/Geophysical survey of the Nigerian Continental Margin.

Project leader: Beach erosion, coastal zone management and ocean dynamics studies (Assistant project leader 1983 to 1990, Project leader 1990 to present).

Project leader: Heavy mineral provenance of the Niger/Benue catchment basin and beach sediments along the Nigeria coastline (1983 to 1985).

Project leader: Offshore canyons, possible importance on erosion along the western Nigerian coastline. Project involves: Bathymetric charting of the canyons, current metering, sedimentological and mineralogical studies, shallow seismic and side scan and general hydrodynamic of shelf.

Project Leader — Geology and general Oceanography of coastal Lagoons (Lagos and Lekki lagoons).

Project leader: Global Climate Change and Sea Level Rise studies in Nigeria.

Chairman, NIOMR Publication Committee (2007 to present).

National Coordinator — Ocean data and information for Africa (ODINAFRICA) Project. Supervised by IOC of UNESCO

Contact Person and officer in-charge of Global Sea Level Observing System (GLOSS) tide gauge in Nigeria as well as NOAA (National Oceanographic and Atmospheric Administration of the United States of America) Next Generation Water Level Measuring System (Tide Gauge) in Nigeria.

Nigeria Desk officer for IOC (UNESCO) activities (1990 to present).

Project Leader: Video mapping of the entire Nigerian coastline for the assessment of impacts of 1m sea level rise on the Nigeria coastline. Collaborative project between NIOMR and the Center for Coastal Research of the University of Maryland, College Park, U.S.A.

National Coordinator COMARAF (Regional Project for Training and Research of African Coastal Systems.

Project leader: IOC/FAO/UNEP project-Study of physical/Geological oceanographic aspects affecting transport and dispersion of pollutants in Lagos Lagoon Nigeria.

Participating geophysicist in the African Mapping project (AMMP) in collaboration with Paterson, Grant and Watson Ltd of Canada International Institute of Aerospace and Earth Sciences Delft, the Netherlands (ITC) and the University of Leeds, United Kingdom (ULIS).

Principal scientist in charge of Shipboard Environmental Acquisition System (SEAS III) in the South Atlantic. A NOAA International project in support of the World Ocean Climate experiment — WOCE.

Project leader and coordinator: Study of drainage systems in Lagos and Victoria Island and effects of sea level changes. A project funded by the Coast and Small Island Division UNESCO Paris 1998-1999

Member- Interministerial Committee on the final solution to the erosion problem on the Bar Beach, Lagos

Part time Lecturer of Marine Geology/Oceanography — University of Lagos Akoka, Lagos - Department of Marine Sciences (August 1996 to 2000).

Guest Professor of Marine Geology/Geophysics — Second Institute of Oceanography Hangzhou China. 2011 to 2114

National Assignments

Member — Interministerial Committee on the final solution to the erosion problem on the Bar Beach, Lagos 1999.

Member: Nigeria/Equatorial Guinea maritime boundary negotiating team (National Boundary Commission).

Member: Nigeria/Sao Tome and Principe maritime boundary negotiating team. (National Boundary Commission).

Member: Nigeria/Benin Republic maritime boundary negotiating team (National Boundary Commission).

Member: Nigerian delegation to the Hague and expert on Maritime boundary — Nigeria/Cameroon Boundary Case at The Hague (National Boundary Commission).

Member and leader of the Technical Team on the Nigerian Extended Continental Shelf Claim project (National Boundary Commission).

National Coordinator: Global Environmental Facility (GEF) Medium Sized project on the Development and Protection of the Coastal and Marine Environment in Sub-Sahara Africa — Nigerian Integrated Problem Analysis (2002 to present). A GEF funded Project under the Federal Ministry of Environment.

Member and Technical leader: National Interministerial Committee on the planning of the Super Prep Comm for the AFRICAN PROCESS to be held in Abuja June 17-19, 2002.

Task Team Leader: Global Programme of Action GPA) Task team on the Development of a National Plan of Action (NPA) for the development and Protection of the coastal and Marine area of Nigeria. A United Nations Environmental Programme (UNEP/GPA) funded Project under the Federal Ministry of Environment (April 2002-April 2007).

Activities in the commission on the limits of the Continental Shelf (CLCS)

Elected member and Vice Chairman of the UNCLOS (United Nations Convention on the Law of the Sea) Commission on the Limits of the Continental Shelf (CLCS) 1997-to 2012.

Vice Chairman: United Nations Commission on the Limits of the Continental Shelf (1997-2002, 2002 to 2007 and 2007 to 2012).

Member: United Nations CLCS subcommission for the consideration of submission of Extended continental shelf claim made the Brazil.

Member: United Nations CLCS subcommission for the consideration of submission of Extended continental shelf claim made by Russia

Member: United Nations CLCS subcommission for the consideration of submission of Extended continental shelf claim made by Australia.

Lecturer — DOALOS Training on Article 76 Accra Ghana 5-9 December 2005

Lecturer — DOALOS Training on Article 76 Cape Town South Africa 13 to 17 August 2007.

Member: United Nations CLCS subcommission for the consideration of submission of Extended continental shelf claim made by Norway.

Member and Chairman: United Nations CLCS subcommission for the consideration of submission of Extended continental shelf claim made the United kingdom in the Ascension Area

Member: United Nations CLCS subcommission for the consideration of submission of Extended continental shelf claim made jointly by France, Ireland, Spain and the UK

Member: United Nations CLCS subcommission for the consideration of submission of Extended continental shelf claim made by Japan.

Member and Chairman: United Nations CLCS subcommission for the consideration of submission of Extended continental shelf claim made the Philippines

Other international assignments undertaken for United Nations agencies and other international agencies

Intergovernmental Oceanographic Commission (IOC) of UNESCO Paris. Consultant to IOC during the IOC/FAO/UNEP workshop on qualitative assessment of pollution in the West and Central African Region (WACAF 11 Phase 2). Lectured participants and conducted field demonstration on Physical aspects of transport and dispersal of pollutants in the coastal and marine environment. Calabar, 19 to 23, 1991.

IOC Consultancy Mission to Nigeria, Benin, Ghana, Cote d'Ivoire, and Senegal, July to September 1992 in respect of:

Training of regional scientists and calibration of equipment for the IOC/FAO/UNEP WACAF 2 PHASE 2 Project-Study of Physical Oceanographic factors responsible for transport and dispersion of pollutant in coastal waters.

To facilitate progress in the analysis of data collected during the First IOCEA cruise in the Gulf of Guinea.

ROPME/IOC/NOAA 100 cruise in the Persian Gulf (ROPME Sea Area) to assess the impacts of the Gulf war on the marine environment. IOC consultant onboard NOAA R/V Mt. Mitchell, Leg VIA. 20 May to 30 June 1992, Kuwait to Abu Dhabi.

Member of UN Law of the Sea Office group of technical experts on the definition of continental shelf, Law of the Sea office, United Nations, New York, New York 1993-96.

IOC mission to Mombasa Kenya to lecture on the Oceanographic survey techniques applied to acquisition of marine environmental data during the UNEP/FAO/IOC/IUCN workshop on EAF/5: Integrated coastal zone management workshop for the eastern Africa, 5-23 July 1994.

UNEP/FAO/IOC/IUCN mission to Kenya, Tanzania, Zanzibar, Seychelles, Madagascar, La-Reunion, Mauritius, Comoros and Mozambique to assess national capabilities for the implementation of EAF/5: Integrated coastal zone management for eastern Africa. 13 Nov. 1993 30 Jan. 1994.

Member IOC Editorial Board for the International Bathymetric Map of the Central Eastern Atlantic (IBCEA) 1989-present.

Vice Chairman United Nations Group of Experts on the Scientific Aspects of the Marine Environmental Protection (GESAMP)

Member United Nations Group of Experts on the Scientific Aspects of the Marine Environmental Protection (GESAMP) working group 30 on impacts of anthropogenically mobilized sediments in coastal areas (1992-present).

Member UNEP Task Team on Global Climate Change and impacts on the West and Central African Region (1990- 2004).

Intergovernmental Oceanographic Commission Committee of the East Central Atlantic (IOCEA) Regional Coordinator for Global Level of the Sea Surface (GLOSS) 1993-present.

Consultant to FAO on Integrated Coastal Area Management (ICAM) project for the Gambia — Project WACAF 11 for FAO/UNEP (1995-present).

Member of Scientific Steering Committee for Land Ocean Interaction in the Coastal Zone (LOICZ) of the International Geosphere Biosphere Programme (IGBP) 1996-2002.

Member IOC ad-hoc committee on DOSS II (1995-2000)

Member of Joint IOC/SCOR/SCOPE assessment of the State of Marine Science and its Contribution to Sustainable Development. 1995-1999.

Member — Lead author: African region special report on the Regional Impacts of Climate Change for the Intergovernmental Panel on Climate Change (IPCC) 1997.

IOCEA (Western African region) regional coordinator for IODE (International Oceanographic data exchange) of IOC (1997- present).

Member of Inter-Governmental Panel on Climate Change (IPCC) working group on the second assessment.

Member of advisory board on Marine Natural Resources Management of ACOPS (Advisory Committee on Protection of the Sea) 1997-2005.

Member of the UNEP group of experts on the development of a GEF project for a Global International Waters Assessment GIWA) 1997.

Member Intergovernmental Oceanographic Commission (IOC) group of expert on GOOS (Global Ocean Observing System) Coastal Module.

Member United Nations Environment Program (UNEP) group of expert on the revitalization of Abidjan and Nairobi Conventions.

Participating Scientist — Synthesis and Upscaling of Sea level Rise Vulnerability Assessment Studies (SURVAS) Project funded by European Union. International Project Office — Middlesex University Enfield United Kingdom. 1999

Member of Working Group on the Development of Methodology for the implementation of the Global International Waters Assessment (GIWA). 2000-2003

Nigerian National Coordinator: Global Environmental Facility Medium Sized Sub Sahara African Project on Development and Protection of the Coastal and Marine Environment in Sub Sahara Africa. 2001 to 2003.

National Coordinator: Oceanographic Data and Information in Africa (ODINAFRICA) 2000 to present.

Task Team leader — Preparation of a national plan of action for the protection of the Nigerian marine environment from land based activities. A GPA-UNEP project. Implemented by the Ministry of Environment Abuja. 2002 to present.

Head Intergovernmental Oceanographic Commission of the Central Eastern Atlantic (IOCEA-UNESCO) Project Office Lagos. 2001 to present.

Technical expert/Resources person at the United Nations Division of Ocean Affairs and Law of the Sea (DOALOS) training on Article 76 for African States, Accra Ghana 5-9 November 2005.

Chairman — UN GESAMP Panel appointed to review the UN Assessment of Assessment (AoA) report (2008 to present).

UNDP International Consultant (Coastal Engineering/Planning/Management) Liberia LDCF/GEF/UNDP Coastal Project on mitigating coastal erosion and sea level rise. 2009-2010.

International oceanographic research cruises

Participated in a multi-disciplinary research cruise on board R/V CORNIDE SAVEDRA in the Balearic continental shelf western Mediterranean code named GEOCARBAL 85 (May 12 to June 10, 1985). Objective of cruise was to establish the bio-sedimentological and geophysical models of the Balearic shelf using 3.5 khz seismic and side scan

Participated in the cruise Gravity survey of the Gulf of Guinea shelf on board R/V STARELLA 24 September to 6 October 1987. A United States of America/Nigeria Collaborative project funded by the U.S. Government.

Cruise Leader: First Intergovernmental Oceanographic Commission (IOC) of UNESCO cruise in the Gulf of Guinea, on board NIOMR R/V SARKIM BAKA 10-25 Oct. 1989. Objectives of cruise was to collect hydrodynamic and marine geological data affecting coastal erosion in the west and Central African Region. Report of cruise and analysis of data already submitted to IOC.

Intergovernmental Oceanographic Commission/National Oceanic and Atmospheric Administration of the United States of America/Regional Ocean for the Protection of the Marine Environment of the Persian Gulf (IOC/NOAA/ROPME) 100 day cruise in the Persian Gulf to assess the impacts of the Gulf war on the marine environment of the Gulf onboard NOAA's R/V MT. MITCHELL. Participated as IOC consultant on leg six, 20 to 30 May 1992.

Cruise leader on a total of 8 sea cruises since 1984 in the Nigerian continental shelf on board NIOMR's R/V OKION and SARKIM BAKA.

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Awosika, L.F., Dublin-Green, C. C., Folorunsho, R., Adekambi, M. A and Adekoya E. A (2003) Formating the Next Generation (Tidal and Meteorological) Data for uploading into the Shell Petroleum Developing Corporation (SPDC) Metocean Database. Final Report for SPDC.

Awosika, L.F., Dublin-Green, C. C., Folorunsho, R., Adekambi, M. A and Adekoya E. A (2003) Benin River Estuary and Adjourning Continental Shelf in the Niger Delta: Transport Dynamics. A consultancy report for Exxon Mobil October 2003.

Awosika, L.F., Dublin-Green, C. O., Folorunsho, R., Adekambi, M. A and Adekoya E. A (2004). Cross, Qua Iboe and Imo River Estuaries: Transport Dynamics. A consultancy report for Exxon Mobil October 2003.

Awosika, L.F., Dublin-Green, C. O., Folorunsho, R. (2004). Dynamics of the offshore/inshore areas of the Mahin mud in Ondo State: Implications of an alleged oil spill from Chevron Nigeria Limited (CNL) offshore facility and its impacts on the surrounding coastline communities. report no 1 for Ondo State government

Awosika, L.F., Dublin-Green, C. O. et al (2004). Collection of baseline (Historical) data for the Channel deepening project off Bonny. Final Report for NLNG Lagos.

Awosika, L.F., Dublin-Green, C. O., Folorunsho, R., Adekambi, M. A and Adekoya E. A (2005). Escravos, Forcados and Ramos River Estuaries and adjourning Continental Shelf: Transport Dynamics. A consultancy report for Exxon Mobil October 2004

Awosika, L.F., Dublin-Green, C. O., Folorunsho, R. (2005a) Dynamics of the offshore/inshore areas of the Mahin mud in Ondo State: Implications of an alleged oil spill from Chevron Nigeria Limited (CNL) offshore facility and its impacts on the surrounding coastline communities. Report no 2 for Ondo State government.

Awosika L. F., Doblin-Green C. O., Folorunsho, R. and Abdulkarim R. (2007). Assessment of ocean surge and erosion threats to the Goshen Estate Lekki Lagos and proposed mitigating options. Final Report for the Goshen Residents Association Lagos. Pg. 68.

Awosika L. F., Doblin-Green C. O., Folorunsho, R. Adegbie S., Abdulkarim R and Omokhomion K. (2007). Lagos Master plan flood risk/protection. Phase 1 Report for Shell Nigeria Exploration and Production Company (SNEPCO). Pg 52.

Awosika, L. F. (2009). LIBERIA LDCF/GEF/UNDP COASTAL PROJECT. Enhancing Resilience of vulnerable coastal areas to climate change risks in Liberia" — Preparatory (PPG) phase. Mission report 2009.

Tanzania Extended continental shelf project. Provided advise to the Tanzania during the preparation of the its submission for continental shelf beyond 200M. 2010 to 2012

Books edited/authored or co-authored

Principal — co author: Global Climate Change and the Rising Challenge of the Sea. Intergovernmental Panel on Climate Change Response Strategies Working Group May 1992.

Editor — Coastlines of Western Africa (Ed. Larry Awosika, Chidi Ibe and P. Scroeder). Published by the American Association of Civil Engineers New York, New York. 1993. 399p.

Co-author — Implications of Climatic Changes and Sea Level Rise on the Niger Delta, Nigeria. A report for UNEP.

Co-author — Global Climate Change and the Rising Challenges of the Sea. Report of the Coastal Zone Management Subgroup. Intergovernmental Panel on Climate Change Response Strategies Working Group May 1992.

Co-Author — Management Arrangements for the Development and Implementation of Coastal Zone Management Programmes. International Conference on Coastal Zone Management World Coast. The Netherlands 1-5 November 1993.

Near shore Dynamics and Sedimentology of the Gulf of Guinea. Ed. A. Chidi Ibe, Larry Awosika and Kouame Aka 1998. 211p. Proceedings of the First Symposium on the IOCEA cruise in the Gulf of Guinea 1995.

Tortel and Awosika L. F — Oceanographic Survey Techniques and Living Resources Assessment Methods. Intergovernmental Oceanographic Commission Manuals and Guides No. 32. 1996.34p.

A Sea of Troubles (2001).

IMO/FAO/UNESCO/WMO/WHO/IAEA/UN/UNEP (GESAMP) Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection. GESAMP Reports and Studies No 70. Printed by RID-Arendal for the United Nations Environment Programme. 35p.

Protecting the Oceans from Land based activities (2001).

IMO/FAO/UNESCO/WMO/WHO/IAEA/UN/UNEP (GESAMP) Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection. GESAMP Reports and Studies No 71. Printed by RID-Arendal for the United Nations Environment Programme. 162p.

International meetings organized

I have been responsible for successfully organizing the following International meetings and workshops:

IOC Regional Committee for the Central Eastern Atlantic second session. Hosted by the Nigerian Institute for Oceanography and Marine Research Lagos from 19-23 February 1990.

IOC International Workshop on the results of the first IOCEA cruise in the Gulf of Guinea. Hosted by the Nigerian Institute for Oceanography and Marine Research Lagos from 17-20 May 1994.

IOC/NIOMR Pilot training course on Physical Oceanography Hosted by the Nigerian Institute for Oceanography and Marine Research Lagos from 17-27 October 1994. Also was a resource person.

Chairman LOC for the IOC/JGOFS/LOICZ International workshop on continental shelf fluxes of Carbon, Nitrogen and Phosphorous. Hosted by the Nigerian Institute for Oceanography and Marine Research Lagos from 14-18 October 1996.

Coordinator and organizer of the International beach cleanup exercise in Nigeria in 1994, 1995 and 1996. This activity is globally coordinated by the Center for Marine Conservation in the United States of America.

Convener — African session on coastal erosion and flooding at the 1997 Coastal Zone conference in Boston July 1997.

International Coordinator — START/IOC/LOICZ Workshop on Climate Change and Coastal processes in West Africa, Cotonou 23-25 Nov 1998.

Conveyer and organizer — African session on Developmental conflicts along the African Coast. Coastal Zone 1999 Conference July 23-29,1999 San Diego USA.

Special proficiency

Versatility in use of micro-computers for word processing, Electronic mail communication, analysis and evaluation of oceanographic data and information (e.g. Ocean-PC, GIS etc.)

Versatility in Automobile repairs and elementary electronics.

Vessel navigation using trisponder, syledis, satellite sat nav, GPS, Radar and other conventional methods.

Experienced in deployment of buoys, current meters, wave riders, tide gauges and other oceanographic equipment.

Have travelled far and wide in Africa as well other parts of the world.

Languages

English — Very proficient

French — slight

Spanish — slight

Galo Carrera (Mexico)

Personal

Birthdate: 19 August 1953

Languages: Equally bilingual in English and Spanish, and some experience in French

Awards and distinguished posts

1979
Second Place in the Second National Contest of Scientific Research for Young Scientists. Contest organized by the National Autonomous University of México

1989
Vice-President of the Canadian Hydrographic Association

1988-1989
Chairman of the Special Study Group on Geodetic Aspects of International Maritime Boundary Delimitation of the Canadian Hydrographic Association

1992-1993
Executive Board Member of Hypercomp, a High Performance Computing Association, Halifax, Nova Scotia, Canada

1989-1999
Secretary of the Committee on Geodetic Aspects of the Law of the Sea (GALOS) of the International Association of Geodesy

1992-1996
Associates' Director and Executive Board Member, Oceans Institute of Canada, Halifax, Nova Scotia, Canada

1992-1997
National Representative to the International Commission on Recent Crustal Movements (ICRCM) of the International Association of Geodesy

1995-Present
Honorary Consul of México in Nova Scotia and New Brunswick, Canada

1996-2001
Honorary member of the Committee on the Geodetic Reference System for South America (Sistema de Referencia Geodésico para America del Sur, SIRGAS)

1997-1999
Member of the Advisory Council of the Faculty of Engineering, National Autonomous University of México (FI-UNAM)

1997-2001
Founding Member, Halifax-México Community Alliance

1997-2002
Elected member, Commission on the Limits of the Continental Shelf, United Nations

1998-2001
Editor, Journal of Marine Geodesy. An International Journal of Ocean Surveys, Mapping, and Sensing

2000
Guest professor, Second Institute of Oceanography, State Oceanic Administration, Hangzhou, People's Republic of China

2000
Fellow of the International Association of Geodesy (IAG). Appointed by decision of the IAG Executive Committee at its meeting in Nice, 28 April

2001-2006
Elected member, Legal and Technical Commission of the International Seabed Authority, United Nations

2002-2007
Re-elected member, Commission on the Limits of the Continental Shelf, United Nations

2006-
Research Associate, Marine Affairs program, Dalhousie University, Halifax, Nova Scotia, Canada

2007-
Visiting Professor, World Maritime University, Malmo, Sweden

2007-2012
Re-elected member, Commission on the Limits of the Continental Shelf, United Nations

2007-
Visiting Lecturer, University of Lund, Lund, Sweden

Research endeavours

Geodetic and hydrographic methodologies for international maritime boundary delimitation

Scientific and technical determination of the outer limits of the continental shelf

Optimum design of geodetic positioning for baselines and geodynamic applications

Statistical analysis of information from sea and lake water level gauges and

Investigation of mathematical models for the determination of movements of the earth's crust

International maritime boundary delimitation experience

1987-Present Adviser and external consultant with the following organizations (in chronological order):

South Pacific Forum Fisheries Agency, Honiara, Solomon Islands
Commonwealth Secretariat, London, United Kingdom
Ministry of Foreign Affairs, Kingston, Jamaica
Department of Foreign Affairs, Manila, Philippines
Department of Foreign Affairs, St George, Grenada
Department of Foreign Relations (SRE), México
Petroleum Directorate, Province of Nova Scotia, Halifax, Canada
Ministry of Land Use and Habitat, Victoria, Mahe, Seychelles
Ministry of Foreign Affairs, Muscat, Oman

Ministry of Foreign Affairs, Georgetown, Guyana
National Boundary Commission, Abuja, Nigeria
Ministry of Justice, Luanda, Republic of Angola
Foreign Ministry, Nuku'alofa, Kingdom of Tonga
Executive Branch (COALEP), Uruguay
Ministry of Lands and Resettlement, Namibia; and
Maritime Agency, Freetown, Sierra Leone

Scientific Authority of the Submissions to the CLCS made by:
Mexico, Philippines, Nigeria, Kingdom of Tonga, and Guyana

Adviser of the Submissions to the CLCS made by:
Mauritius and Seychelles (Joint), Uruguay, and Namibia

Scientific Authority of the Submissions to the CLCS currently prepared by:
Sierra Leone

Cases before international tribunals:

Arbitration between Newfoundland and Labrador and Nova Scotia concerning Portions of the Limits of their Offshore Areas as Defined in the Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act and the Canada-Newfoundland Atlantic Accord Implementation Act

Award of the Tribunal

http://dspace.hil.unb.ca:8080/dspace/handle/1882/948

Arbitral Tribunal Constituted Pursuant to Article 287, and in Accordance with Annex VII, of the United Nations Convention on the Law of the Sea in the Matter of an Arbitration between: Guyana –and- Suriname

http://www.pca-cpa.org/showfile.asp?fil_id=664

Activities in the Commission on the Limits of the Continental Shelf 1997-2008

1997 Elected member for the period 1997-2002 by the Sixth Meeting of States Parties to the United Nations Convention on the Law of the Sea, United Nations Headquarters, New York, NY, 13 March (SPLOS/20)

1997 First Session of the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, NY, USA, 15-20 June (CLCS/1)

Contributor to the development of the Rules of Procedure (CLCS/3)

1997 Second Session of the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, NY, USA, 2-12 September (CLCS/4)

Contributor to the development of the Rules of Procedure (CLCS/3/Rev.1)

Chairman of the Open Ended Group on the Modus Operandi (CLCS//L.3)

1998 Third Session of the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, NY, USA, 4-15 May (CLCS/7)

- Chairman, Open Ended Group on Confidentiality — Annex II to the Rules of Procedure

- Chairman, Research Group on Geodesy
- Chairman, Editorial Committee of the Scientific and Technical Guidelines

Chairman of the Editorial Committee Working Groups on:

1. Introduction
2. Entitlement to and delineation of the outer limits of the continental shelf
3. Geodetic Methodologies and the outer limits of the continental shelf

10. References and Bibliography; and

Annex I. List of International Organizations

Member of the Editorial Committee Working Groups on:

4. The 2,500 m isobath
5. Foot of the slope determined as the point of maximum change in the gradient at its base
6. Foot of the slope determined by evidence to the contrary to the general rule
9. Information on the outer limits of the continental shelf; and Annex II. Flowcharts, tables, and illustrations summarizing the procedure for establishing the outer limits of the continental shelf

1998 Fourth Session of the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, NY, USA, 31 August-4 September (CLCS/9)

- Chairman, Open Ended Group on Confidentiality — Annex II to the Rules of Procedure
- Chairman, Editorial Committee of the Scientific and Technical Guidelines (CLCS/11)

1999 Fifth Session of the Commission on the Limits of the Continental Shelf. United Nations Headquarters New York , NY, USA, 3-14 May (CLCS/12)

- Chairman, Editorial Committee of the Scientific and Technical Guidelines (CLCS/11)
- Member, Informal Working Group on Training

1999 Sixth Session of the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, NY, USA, 30 August-3 September (CLCS/18)

- Chairman, Editorial Committee of the Scientific and Technical Guidelines
- Member of the Working Group on Annex II. Flowcharts, tables, and illustrations summarizing the procedure for establishing the outer limits of the continental shelf
- Member, Working Group on Training (CLCS/11/Add.1)

1999 International Conference organised by the Advisory Board on Geodetic, Hydrographic and Oceanographic Aspects of the Law of the Sea (ABLOS) of the International Hydrographic Organization (IHO),

International Association of Geodesy (IAG) and Intergovernmental Oceanographic Commission (IOC) on Technical Aspects of Maritime Boundary Delineation and Delimitation, Including UNCLOS Article 76 Issues. International Hydrographic Bureau, Montecarlo, Principality of Monaco, 9-10 September

- ABLOS Session Convener, Chairman, and Speaker, Invited Session of the Commission on the Limits of the Limits of the Continental Shelf:

  Carrera, G. (1999). Wide Continental Margins of the World: A Survey of Marine Scientific Requirements Posed by the Implementation of Article 76 of the United Nations Convention on the Law of the Sea

  Carrera, G. (1999). The impact of the seabed roughness on the location of the outer limits of the extended continental shelf

  Albuquerque A. and G. Carrera (1999). Information on the outer limits of the extended continental shelf

2000 Seventh Session of the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, NY, USA, 1-5 May (CLCS/21)

- Chairman, Editorial Committee. Basic flowchart for preparation of a submission of a coastal State to the Commission on the Limits of the Continental Shelf (CLCS/22)
- Member, Working Group on Training
- Chairman, Standing (five-member) Committee on Confidentiality
- Convener, Co-Chairman and Speaker, Open Meeting of the CLCS, United Nations Headquarters, New York, New York, USA, 1 May:

  Astiz, P.O. and G. Carrera (2000). Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf: Part I, Chapters 1 to 3. Open Meeting of the CLCS

  Srinivasan, K. R. and G. Carrera (2000). Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf: Part II, Chapters 4 to 6. Open Meeting of the CLCS

  Juračić, M. and G. Carrera (2000). Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf: Part III, Chapters 7 to 9

  Carrera, G. (2000). Geographic scope and scientific challenges posed by Article 76 of the United Nations Convention on the Law of the Sea

  Carrera, G. and A. Albuquerque (2000). An outline for the preparation of a national submission to the Commission on the Limits of the Continental Shelf

2000 Eighth Session of the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, NY, USA, 28 August-1 September (CLCS/25)

- Chairman, Standing (five-member) Committee on Confidentiality. Revision of Annex II to the Rules of Procedure (CLCS/3/Rev.3)
- Chairman of the Editorial Committee. Outline for a five-day training course for delineation of the outer limits of the continental shelf beyond 200 nautical

miles and for preparation of a submission of a coastal State to the Commission on the Limits of the Continental Shelf (CLCS/24)

- Member, Working Group on Training

2001 Ninth Session of the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, NY, USA, 21-25 May (CLCS/29)

- Chairman, Standing (five-member) Committee on Confidentiality. Corrigendum (CLCS/3/Rev.3/Corr.1)
- Chairman of the Editorial Committee. Internal Procedure of the Subcommission of the Commission on the Limits of the Continental Shelf (CLCS/L.12)
- Member, Working Group on Training

2002 Tenth Session of the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, NY, USA, 25 March-12 April (CLCS/32)

- Elected Member, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by the Russian Federation
- Elected Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by the Russian Federation
- Member, Working Group on Training
- Co-Editor, Training Manual on the Continental Shelf. Division of Ocean Affairs and the Law of the Sea

2002 Session of Subcommission on the Limits of the Continental Shelf. United Nations Headquarters, New York, NY, USA, 10-14 June (CLCS/34)

- Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by the Russian Federation on 20 December 2001 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles. Coordinator of the working groups on geology and geophysics, hydrography-morphology, and other scientific information. Recommendations prepared by the Subcommission of the CLCS, established for the consideration of the submission made by the Russian Federation. Adopted by the Subcommission on 14 June 2002, and transmitted for approval to the Commission on the Limits of the Continental Shelf

2002 Elected member for the period 2002-2007 by the Twelfth Meeting of States Parties to the United Nations Convention on the Law of the Sea, United Nations Headquarters, New York, NY, 18 April (SPLOS/91)

2002 Eleventh Session of the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, NY, USA, 24-28 June (CLCS/34)

- Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by the Russian Federation. Recommendations of the Commission on the Limits of the Continental Shelf (CLCS) in regard to the submission made by the Russian Federation on 20 December 2001 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles. Recommendations prepared by

the Subcommission of the CLCS, established for the consideration of the submission made by the Russian Federation. Adopted after amendment by the Commission on 27 June 2002 (A/57/57/Add.1, pp. 6-11)

2003 Twelfth Session of the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, NY, USA, 28 April-2 May (CLCS/36)

- Member, Informal Group with I. Fagoonee and Mr. P. Symonds, to consider issues related to the detailed scientific work of the Commission
- Contributor to the consolidation of the Rules of Procedure and Modus Operandi of the CLCS
- Presentation of the Programme of Work to prepare a Training Manual on Article 76 with Mr. H. Brekke for the Division of Ocean Affairs and the Law of the Sea

2004 Thirteenth Session of the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, NY, USA, 26-30 April (CLCS/39)

- Contributor to the preparation of a letter of response to the Russian Federation
- Contributor to the consolidation of the Rules of Procedure and Modus Operandi of the CLCS
- Presentation of the Progress of Work in the preparation of a Training Manual on Article 76 with Mr. H. Brekke for the Division of Ocean Affairs and the Law of the Sea

2004 Fourteenth Session of the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, NY, USA, 30 August-3 September 2004 (CLCS/42)

- Elected Member, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by Brazil
- Elected Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by Brazil
- Member, Working Group on Training
- Presentation of the Progress of Work in the preparation of a Training Manual on Article 76 with Mr. H. Brekke, co-editor, for the Division of Ocean Affairs and the Law of the Sea

2005 Fifteenth Session of the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, NY, USA, 4-22 April 2005 (CLCS/44)

- Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by the Federal Republic of Brazil on 17 May 2004 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles. Coordinator of the work conducted by the working groups on geology, hydrography, and seismic information. Member of the intersessional working groups on Amazon Cone, Northern Brazilian Ridge,

Minerva Seamount, Vitoria Trindade Ridge, Sao Paulo Plateau, and Southernmost Points

2005 Sixteenth Session of the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, NY, USA, 29 August-16 September 2005 (CLCS/48)

- Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by the Federal Republic of Brazil on 17 May 2004 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles. Coordinator of the work conducted by the working groups on geology, hydrography, and seismic information. Member of the intersessional working groups on Amazon Cone, Northern Brazilian Ridge, Minerva Seamount, Vitoria Trindade Ridge, Sao Paulo Plateau, and Southernmost Points

2006 Seventeenth Session of the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, NY, USA, 20 March-21 April 2006 (CLCS/50)

- Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by the Federal Republic of Brazil on 17 May 2004 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles. Coordinator of the work conducted by the working groups on geology, hydrography, and seismic information. Member of the intersessional working groups on Amazon Cone, Northern Brazilian Ridge, Minerva Seamount, Vitoria Trindade Ridge, Sao Paulo Plateau, and Southernmost Points

2006 Eighteenth Session of the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, NY, USA, 21 August-15 September 2006 (CLCS/52)

- Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by the Federal Republic of Brazil on 17 May 2004 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles. Coordinator of the work conducted by the working groups on geology, hydrography, and seismic information. Member of the intersessional working groups on Amazon Cone, Northern Brazilian Ridge, Minerva Seamount, Vitoria Trindade Ridge, Sao Paulo Plateau, and Southernmost Points

2007 Nineteenth Session of the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, NY, USA, 5 March-13 April 2007 (CLCS/54).

- Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by the Federal Republic of Brazil.

- Presentation of the Draft Recommendations of the Commission on the Limits of the Continental Shelf (CLCS) in regard to the submission made by Brazil on 17 May 2004 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles.

2007 Elected member for the period 2007-2012 by the Seventeenth Meeting of States Parties to the United Nations Convention on the Law of the Sea, United Nations Headquarters, New York, NY, 14 June (SPLOS/164).

2007 Twentieth Session of the Commission on the Limits of the Continental Shelf. United Nations headquarters, New York, NY, USA, 27 August-14 September 2007 (CLCS/56).

- Elected Chairman of the Training Committee of the Commission on the Limits of the Continental Shelf for the period 2007-2009.
- Member of the core group of the Editorial Committee.
- Elected Member, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by the French Republic in regards to New Caledonia and French Guiana.
- Elected Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by France on 22 May 2007 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles. Coordinator of the work conducted by the working groups on geology and geophysics, geodesy and hydrography, and quality control.

2008 Twenty-first Session of the Commission on the Limits of the Continental Shelf. United Nations headquarters, New York, NY, USA, 17 March-18 April 2008 (CLCS/58).

- Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by France on 22 May 2007 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles. Coordinator of the work conducted by the working groups on geology and geophysics, geodesy and hydrography, and quality control.

2008 Twenty-second Session of the Commission on the Limits of the Continental Shelf. United Nations headquarters, New York, NY, USA, 11 August-12 September 2008 (CLCS/60).

- Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by France on 22 May 2007 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles. Coordinator of the work conducted by the working groups on geology and geophysics, geodesy and hydrography, and quality control.

2009 Twenty-third Session of the Commission on the Limits of the Continental Shelf. United Nations headquarters, New York, NY, USA, 2 March-9 April 2009 (CLCS/62).

- Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by France on 22 May 2007 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles. Coordinator of the work conducted by the working groups on geology and geophysics, geodesy and hydrography, and quality control.
- Member of the ad hoc inter-sessional working group on Expenses of CLCS members.

2009 Twenty-fourth Session of the Commission on the Limits of the Continental Shelf. United Nations headquarters, New York, NY, USA, 10 August-11 September 2009 (CLCS/64).

- Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by France. Presentation of the Draft Recommendations of the Commission on the Limits of the Continental Shelf (CLCS) in regard to the submission made by France on 22 May 2007 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles.
- Elected Member, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by Japan on 12 November 2008.
- Elected Vice-Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by Japan on 12 November 2008 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles.
- Member of the ad hoc working group relating to the Notes Verbales submitted by States on the Submission made by Japan.
- Presentation on the Workload of the Commission to the Bureau of the Meeting of States Parties, 1 September 2009.
- Re-elected Chairman of the Training Committee for the period 2009-2012.

2010 Twenty-fifth Session of the Commission on the Limits of the Continental Shelf. United Nations headquarters, New York, NY, USA, 5-16 April 2010 (CLCS/66).

- Vice-Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by Japan on 12 November 2008 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles.
- Presentation on behalf of the CLCS to the Informal Working Group of the Meeting of States Parties concerning the workload of the Commission, 14 April 2010.

2010 Twenty-sixth Session of the Commission on the Limits of the Continental Shelf. United Nations headquarters, New York, NY, USA, 16-23 August 2010 (CLCS/68).

- Vice-Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by Japan on 12 November 2008 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles.

2011 Twenty-seventh Session of the Commission on the Limits of the Continental Shelf. United Nations headquarters, New York, NY, USA, 28 March-5 April 2011 (CLCS/70).

- Vice-Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by Japan on 12 November 2008 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles.

- Presentation on behalf of the CLCS to the Informal Working Group of the Meeting of States Parties concerning the workload of the Commission, 5 April 2011.

2011 Twenty-eighth Session of the Commission on the Limits of the Continental Shelf. United Nations headquarters, New York, NY, USA, 15-26 August 2011 (CLCS/72).

- Vice-Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by Japan on 12 November 2008 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles.
- Report of training activities conducted by the Government of Angola with the assistance of DOALOS and the participation of members and former members of the CLCS.
- Elected Member, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by the Cook Islands on 16 April 2009.
- Elected Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by the Cook Islands on 16 April 2009 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles.

Summary of appointments in subcommissions of the Commission on the Limits of the Continental Shelf, 1997-2010

2002 Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by the Russian Federation on 20 December 2001 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles.

2002 Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by the Federal Republic of Brazil on 17 May 2004 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles.

2007 Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by France on 22 May 2007 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles.

2009 Vice-Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by Japan on 12 November 2008 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles.

2011 Chairman, Subcommission on the Limits of the Continental Shelf for the consideration of the submission made by the Cook Islands on 16 April 2009 of information on the proposed outer limits of its continental shelf beyond 200 nautical miles.

Activities in the Legal and Technical Commission of the International Seabed Authority, 2002-2007

2002 Elected member for the period 2002-2007 by the Council of the International Seabed Authority represented by States Parties to the United Nations Convention on the Law of the Sea, International Seabed Authority Headquarters, Kingston, Jamaica, 13 March.

2002 Session of the Legal and Technical Commission, 5-9 August. Eighth Session of the International Seabed Authority. Kingston, Jamaica, 5-16 August (ISBA/8/C/6).

- Evaluation of the annual reports submitted by contractors. Report and recommendations of the Legal and Technical Commission (ISBA/8/LTC/2).
- Chairman, Environment Committee of the LTC.

2003 Session of the Legal and Technical Commission, 21 July-1 August. Ninth Session of the International Seabed Authority, Kingston, Jamaica, 28 July-8 August (ISBA/9/C/4).

- Evaluation of the annual reports submitted by contractors. Report and recommendations of the Legal and Technical Commission (ISBA/9/LTC/2).
- Chairman, Environment Committee of the LTC.
- Presentation of "Legal and Scientific Issues Relating to the Preparation of Draft Regulations on Prospecting and Exploration for Polymetallic Sulphides and Cobalt-Rich Crusts: Environmental Impact of Exploration Activities"
- Report of the Environmental Committee: Draft Regulations Draft Regulations on Prospecting and Exploration for Polymetallic Sulphides and Cobalt-Rich Crusts

2004 Session of the Legal and Technical Commission, 18-28 May. Tenth Session of the International Seabed Authority, Kingston, Jamaica, 24 May-8 June (ISBA/10/C/).

- Evaluation of the annual reports submitted by contractors. Report and recommendations of the Legal and Technical Commission (ISBA/10/LTC/).
- Chairman, Environment Committee of the LTC.

2004 Session of the Legal and Technical Commission, 18-28 May. Tenth Session of the International Seabed Authority, Kingston, Jamaica, 15-26 August (ISBA/11/C/8).

- Evaluation of the annual reports submitted by contractors. Report and recommendations of the Legal and Technical Commission.
- Chairman, Environment Committee of the LTC.

Publications and scholarly addresses

Over 190 combined publications in journals published, reports and scholarly addresses made in international conferences, seminars and courses in all five continents.

Lecturer in the four United Nations Regional Training Courses on the Preparation of a submission to the Commission on the Continental Shelf held in

- Suva, Fiji, 28 February-4 March 2005;
- Colombo, Sri Lanka, 16-20 May 2005;
- Accra, Ghana, 5-9 December 2005; and
- Buenos Aires, Argentina, 8-12 May 2006.

four Sub-regional Training Courses held in

- Bandar Seri Begawan, Brunei Darussalam, 12-16 February 2007;
- Cape Town, South Africa, 13-17 August 2007;
- Port of Spain, Trinidad and Tobago, 14-18 January 2008; and
- Wyndhoek, Namibia, 22-26 September 2008.

a national Training Course held in

Luanda, Angola, 16-20 May 2011.

Co-author and co-editor of the United Nations publication:

"Law of the Sea, The: Training Manual for Delineation of the Outer Limits of the Continental Shelf Beyond 200 Nautical Miles and for Preparation of Submissions to the Commission on the Limits of the Continental Shelf. Released in February 2007. English (also available in French, Spanish) ISBN13: 9789211337419, Sales Number: 06.V.4, 530 page(s), 8.5x11, Paperback, Publisher: United Nations, Office of Legal Affairs.

Symposium participation

Over 70 international symposia and conferences attended from 1977 to 2011.

Francis L. Charles (Trinidad and Tobago)

Profession:	Hydrographer/Land Surveyor/Geodesist
Education:	BSc in Surveying Sciences with a Major in Offshore Geodesy-North East London Polytechnic, United Kingdom (1980)
	Certificate in Maritime Boundary Delimitation University of Toronto (1987)

Employment Record:

November' 99-Present	Consultant in Hydrography, Geodesy and Maritime Boundary Delimitation
October' 96-October'99	On contract with the Commonwealth Fund for Technical Co-operation, as an expert in Land Surveying and Hydrography, to the Government of Saint Lucia.
September'89-September'96	Director of Surveys and Commissioner of State Lands, Government of Trinidad and Tobago
1984-1989	Officer in Charge of the Hydrographic Surveying Unit, Lands and Surveys Division, Trinidad and Tobago
1980-1984	Hydrographic Surveyor-Lands and Surveys Division, Government of Trinidad and Tobago
1968-1977	Land Surveyor — Lands and Surveys Division, Government of Trinidad and Tobago

Professional Experience:

Consultant in Cadastral Surveying, Hydrography, Geodesy and Maritime Boundary Delimitation (November'99-Present)

Elected as a member of the Commission on the Limits of the Continental Shelf (CLCS) by the States Parties to the United Nations Convention on the Law of the Sea in June 2007 for the period 2007-2012

Member of the CLCS Sub-commission for the consideration of the Submission made by Norway

Member of the CLCS Sub-commission for the consideration of the Joint Submission made by France, Ireland, Spain and the United Kingdom of Great Britain and Northern Ireland

Member of the CLCS Sub-commission for the consideration of the Submission made by the United Kingdom of Great Britain and Northern Ireland for Ascension Island

Member of the CLCS Sub-commission for the consideration of the Joint Submission made by the Republic of Mauritius and the Republic of Seychelles in the region of the Mascarene Plateau

Member of the CLCS Sub-commission for the consideration of the Submission made by France in the areas of the French Antilles and Kerguelen Islands

Member of Committee of the CLCS on the provision of scientific and technical advice to coastal states

Member of the editorial Committee of the CLCS

Member of the Training Committee of the CLCS

Instructor of the Training Course for the Delimitation of the Outer Limits of the Continental Shelf Beyond 200 Nautical Miles and for Preparation of Submissions to the CLCS, convened by the Division for Ocean Affairs and the Law of the Sea in Trinidad and Tobago, January 14-18, 2008

Expert on contract with the Commonwealth Fund for Technical Cooperation, to the Government of Saint Lucia (October'96-October'99)

Managed the National GPS survey of Saint Lucia (1999-2000)

Director of the Lands and Surveys Division and Commissioner of State Lands, Government of Trinidad and Tobago (G.O.T.T.) (1989-1997)

Managed the national GP control survey of Trinidad and Tobago. (1992-1996)

Assisted in the Establishment of the Hydrographic Surveying Unit in Trinidad and Tobago (1982-1987)

Appointed National Counterpart to the United Nations' Consultant, during the life of this G.O.T.T./U.N.D.P. Project (9182-1987). Managed the Unit from 1984-1989

Member of the National Negotiating Team of Trinidad and Tobago on Maritime Boundary Delimitation (1985-2006)

Advised the team on matters of Hydrography, Cartography and Geodesy, in negotiations with Venezuela, Grenada and Barbados.

Managed the survey of the Archipelagic Base Line Points around Trinidad and Tobago and prepared final submission for the United Nations

Member of Trinidad and Tobago's Legal Team in the Maritime Boundary Dispute — Barbados/Trinidad and Tobago — before an UNCLOS Annex VII Tribunal (2005)

Advisor to the Ministry of Foreign Affairs of Trinidad and Tobago on the preparation of an Article 76 Submission to the Commission on the Limits of the Continental Shelf (2008 & 2009)

Advisor to the Trinidad and Tobago/Grenada Maritime Boundaries Commission during 2009 and 2010

Hydrographic and Maritime Boundary Consultant to the Organisation of Eastern Caribbean States (Maritime Boundaries Project) February-August, 2007

Professional Attachment (U.N. Fellow) to the Canadian Hydrographic Service. (1985) The attachment included discussions with the Lawyer and Hydrographer who represented Canada on Law of the Sea Negotiations

Member of the International Group of Experts on Maritime Baselines. The Group met at the U.N. Headquarters, N.Y., from August 1987 to September 4, 1987, to examine the Relevant Provisions of the Law of the Sea

Part-time Lecturer in Hydrography at the University of the West Indies (1988-1992)

Elected Chairman of Technical Committee I (Cartographic Data Acquisition) at the Fifth United Nations Regional Cartographic Conference for the Americas held at U.N., N.Y., January 11-15, 1993

Representative of Trinidad and Tobago to the International Hydrographic Organization (1987-1997)

Member of the Board of Directors of the Institute of Marine Affairs of Trinidad and Tobago (1989-1996)

Attended an International Symposium on the Scientific and Legal Aspects of the Regimes of the Continental Shelf and the Area, held in Beijing, P.R. China, May 27-28, 2010

Ivan F. Glumov (Russian Federation)

[Original: Russian]

Novolipetsk Integrated Iron and Steel Enterprise (NLMK);

Chief Executive Officer of the open joint-stock company Severneftegaz;

Adviser to the Minister of Natural Resources and Ecology of the Russian Federation;

Special adviser to the head of administration of the Krasnodar region;

Scientific supervisor for the Federal Mineral Resources Agency of the Russian Federation (Rosnedr) on the project "Outer limit of the continental shelf of the Russian Federation in the Arctic".

Born in 1936, married, one son.

Education: higher. Graduated in 1959 from Moscow State University in geodesy, aerial photography and cartography.

Degree: Doctor of Technical Science.

Foreign languages: Fluent in English.

Professional experience

October 2004-present	Chief Executive Officer of the open joint-stock company Severneftegaz; adviser to the Minister of Natural Resources and Ecology of the Russian Federation, special adviser to the head of administration of the Krasnodar region, scientific supervisor for the Federal Mineral Resources Agency of the Russian Federation on the project "Outer limit of the continental shelf of the Russian Federation in the Arctic".
2002-October 2004	Deputy Minister of Natural Resources and Ecology of the Russian Federation, directly responsible for priority functions of the Ministry in connection with the world oceans and related international law, including: • Conducting negotiations with neighbouring States on maritime delimitation (Caspian Sea, Black Sea, Sea of Azov, Barents Sea) for the exploitation of mineral resources • Defending submissions by the Russian Federation to the United Nations Commission on the Limits of the Continental Shelf • Participating in annual sessions of the United Nations General Assembly and the International Seabed Authority, and also other events related to the world ocean • Coordinating the implementation of the Russian Federal "World Ocean" programme

	• Organizing and conducting the tendering process for the right to exploit mineral resources (oil and gas deposits and fields, etc.) in the territorial sea and on the continental shelf.
1999-2001	State Secretary/Deputy Minister for Natural Resources of the Russian Federation. Handled questions related to the normative, regulatory and legal framework for the use of resources, coordinated cooperation with chambers of the Federal Assembly; conducted ocean-related geological, geophysical and specialized studies; carried out related scientific research and experimental design work; studied energy and mineral resources of the continental shelf and the world oceans, together with economic questions and the longer-term development of natural resources.
1996-1999	Head of the department for scientific and maritime issues of the Ministry of Natural Resources of the Russian Federation. Management of the Ministry's research and design department, and also of maritime oil and gas activities on the continental shelf of the Russian Federation and geological research in the Arctic, Antarctic and the oceans.
1988-1996	Head of the maritime geological service of the State Geology Committee (Roskomnedr) and, after 1996, on the staff of the Ministry of Natural Resources of the Russian Federation. Managed the activities of maritime-geological and geophysical enterprises engaged in geological and geophysical research in various areas of the world oceans, in the Arctic and Antarctic and on the continental shelf, or involved in the production of equipment and technical supplies for maritime research, exploration and surveying for oil and gas.
1982-1988	General Director of the Southern Scientific Production Association for Maritime Geological Prospecting (Yuzhmorgeologiya), Director of research in maritime geophysics. Managed and organized prospecting for ferromanganese nodules, prepared and defended submissions to the Preparatory Commission for the United Nations International Seabed Authority for the allocation of a pioneer site in the Pacific Ocean, in accordance with the United Nations Convention on the Law of the Sea, and the development of new systems and technologies for maritime oil- and gas-related geophysical activities.
1971-1981	Management responsibilities in the scientific units of the Ministry of Geology of the USSR. Management of scientific research into the production of maritime geophysical and research equipment and navigation aids,

	organization of research on oil and gas, ferromanganese nodules and other types of mineral resources on the continental shelf of the USSR, and in the Pacific and Indian Oceans.
1960-1970	Hydrographer, senior hydrographer on maritime expeditions of the Ministry of Geology of the USSR. Involved in organizing and carrying out a wide range of maritime geophysical research into oil and gas on the continental shelf of the Barents Sea, the Kara Sea, the Black Sea, the Baltic Sea, the Sea of Okhotsk and the Mediterranean Sea, and on the Indian, Sri Lankan and Bulgarian shelves.
1959-1960	Technician-surveyor on expeditions of the Tyumen division of the Ministry of Geology of the USSR.

International professional experience

1962-1963	Senior navigator-hydrographer on a maritime geophysical expedition to Egypt.
1964-1966	Senior navigator-hydrographer on a maritime geophysical expedition to India.
1968-1970	Head of the Bulgaria maritime geophysical expedition.
1975	Expert on maritime petroleum geophysics in Angola.
1980-1984	Member of the Soviet delegation in negotiations with France, Japan and the United States of America on the resolution of seabed area disputes in the Pacific Ocean.
1984-1995	Member of Soviet, and subsequently Russian, delegations to sessions of the Preparatory Commission for the United Nations International Seabed Authority.
1995-2005	Member, deputy head, then head of the Russian delegation to sessions of the International Seabed Authority.
1996–2006	Member of the Legal and Technical Commission of the International Seabed Authority.
2000-2003	Head of the Russian delegation in negotiations with Kazakhstan and Azerbaijan on the delimitation of the seabed in the Caspian Sea.
2002-2004	Member of the Russian delegation in negotiations on the delimitation of the seabed in the Black Sea and the Sea of Azov.
2001-2004	Head of the Russian delegation for the presentation of the Russian submission on the outer limits of the continental shelf to the United Nations Commission on the Limits of the Continental Shelf.

2001-2004	Head of the Russian delegation in negotiations on the outer limits of the continental shelf of Russia with the United States of America, Japan, Norway, Canada and Denmark.

Scientific activities

Member of the Russian Academy of Mining Sciences, Russian Academy of Natural Sciences, Russian Academy of Technological Sciences.

Scientific research in the field of international maritime law, maritime geophysics and geology. Author of more than 125 scientific works, including five monographs, 40 USSR copyrights and 10 patents from the United States, France, the Federal Republic of Germany and Hungary.

Member of the council of experts of the Government of the Russian Federation. Expert assessment of projects on the development of oil and gas on the continental shelf of the Russian Federation, including the Sakhalin 1,2,3, Prirazlomnoe and Shtokman, and "Blue Stream" projects.

Member of the council of experts of the maritime board of the Government of the Russian Federation. Head of the section on the development of maritime mineral and energy resources.

Drafting of international legal documents related to the implementation of the United Nations Convention on the Law of the Sea, and the Federal Acts on the continental shelf of the Russian Federation, on the exclusive economic zone of the Russian Federation, on inland waters, the territorial sea and the contiguous zone of the Russian Federation, and on mineral resources.

Honorary titles

Honoured Geologist of Russia, Honoured Scientist of Russia, holder of State awards of the USSR, the Council of Ministers of the USSR and the Government of the Russian Federation in the fields of science and technology.

State awards

Order of the "Badge of Honour", Order for Maritime Services.

Professional grade

State Counsellor of the Russian Federation, 2nd class (Decree of the President of the Russian Federation No. 445 of 6 April 1999).

Richard Thomas Haworth (Canada and United Kingdom of Great Britain and Northern Ireland)

[Original: English and French]

B.Sc. (Hons, Durham), Ph.D. (Cambridge), FGS, C. Geol

Year of Birth: 1944

Place of Birth: Derbyshire, United Kingdom

Languages: English (native tongue); French (officially bilingual)

Academic qualifications

Chartered Geologist — Geological Society of London, United Kingdom

Ph.D. Geophysics (Gravity Measurements at Sea), Cambridge University, United Kingdom (Shell Postgraduate Scholarship in Geophysics), 1968

Ph.D. Geophysics (Gravity Measurements at Sea), Cambridge University, United Kingdom (Shell Postgraduate Scholarship in Geophysics), 1968

Career summary

Oct 2003-present:

Independent consultant specializing in continental shelf delineation, as Principal of RTH Consultants, Wolfville, Nova Scotia, Canada

Adjunct Professor, School of Public Administration, Faculty of Management

Dalhousie University, Halifax, Nova Scotia, Canada

2000-Oct 2003:

Assistant Deputy Minister, Minerals and Metals Sector, Natural Resources Canada, Government of Canada, Ottawa

1990-2000:

Director General, Sedimentary and Marine Geoscience Branch, Geological Survey of Canada, Earth Sciences Sector, Natural Resources Canada, Government of Canada, Ottawa

1983-1990:

Chief Geophysicist, British Geological Survey, Natural Environment Research Council, UK

1968-1983:

Positions with progressively increasing managerial responsibilities from Research Scientist to Research Manager at the Bedford Institute of Oceanography (BIO), Dartmouth, Nova Scotia — currently the Geological Survey of Canada (Atlantic)

Professional associations

- Geological Society of London, Fellow (1983-present), Council (1985-1988), Vice-President (1986-1988), Advisory Editor of the Journal of the Geological Society (1985-2000)
- Geological Association of Canada, Fellow (1974-present)
- Geological Society of America, Fellow (1982-present)
- American Geophysical Union, Member (1969-1977; 1981-present)
- Royal Astronomical Society, Fellow (1966-1975; 1983-2000)

Principal activities relevant to continental shelf delineation (1993-present):

Canadian representative on the International Group of Experts convened by the United Nations Division for Oceans Affairs and the Law of the Sea in March 1993 and September 1995 to assess the technical implications of applying article 76 of the United Nations Convention on the Law of the Sea to define the limits of the continental shelf.

Contracted by the United Nations Division for Oceans Affairs and the Law of the Sea to draft the Provisional Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf and chaired the meeting of the International Group of Experts in September 1995 to consider this draft.

Supervised preparation of "Canada and Article 76 of the Law of the Sea: Defining the Limits of Canadian Resource Jurisdiction Beyond 200 nautical miles in the Atlantic and Arctic Oceans", Geological Survey of Canada Open File Report 3209, Macnab, R.F. (editor), 1994.

Supervised preparation of "Canada and Article 76 of the Law of the Sea: Defining the Limits of Canadian Resource Jurisdiction Beyond 200 nautical miles in the Atlantic and Arctic Oceans", Geological Survey of Canada Open File Report 3209, Macnab, R.F. (editor), 1994.

Supervised preparation of "Canada and Article 76 of the Law of the Sea: Defining the Limits of Canadian Resource Jurisdiction Beyond 200 nautical miles in the Atlantic and Arctic Oceans", Geological Survey of Canada Open File Report 3209, Macnab, R.F. (editor), 1994.

Conducted the final quality control revision and editing of the submission to the Commission on the Limits of the Continental Shelf by the Government of Nigeria, under contract to Seaforth Engineering Group Inc.

Invited participation and contributions to national and international conferences and symposia (1993-present)

- Invited participation and contributions to national and international conferences and symposia (1993-present)
- Sixth International Conference on Arctic Margins, Alaska, USA, 2011
- Extended Continental Shelf Panel, Geological Association of Canada, Ottawa, Canada, 2011, with a contribution (co-authored) entitled: "Defining the Limits of the Continental Shelf: Interplay of Science and Law"

- 6th Biennial ABLOS Conference, Contentious Issues in UNCLOS — Surely Not?, International Hydrographic Bureau, Monaco, 2010
- International Symposium on Scientific and Legal Aspects of the Regimes of the Continental Shelf and the Area, Beijing, China, 2010, with a contribution entitled: "Complexities Associated with Article 76 of UNCLOS and its Implementation"
- Legal and Scientific Aspects of Continental Shelf Limits, Reykjavik, Iceland, 2003, with a contribution entitled: "Determination of the Foot of the Continental Shelf by Means of Evidence to the Contrary to the General Rule"
- Continental Shelf Workshop, Buenos Aires, Argentina, 2000, with a contribution entitled: "Characteristics of the Continental Margins"
- Defining the Outer Limits of the Continental Shelf, International Boundaries Research Unit, Durham, UK, 1999, with contributions entitled: "Characteristics of Continental Margins", and "Preparing a Submission to the Commission"
- Oceans Policy: New Institutions, Challenges and Opportunities, Centre for Oceans Law and Policy 22nd Annual Seminar, Montego Bay, Jamaica, 1998, with a contribution entitled: "The Commission on the Limits of the Continental Shelf"
- Mapping the Continental Shelf Limit: Legal/Technical Interface, University of New Brunswick, Canada, 1994, with contribution entitled: "Geological Requirements Arising from the Treaty"

Publication activity

- Author of approximately 100 scientific articles in national and international journals, including on matters related to geological and geophysical characteristics of continental margins around the world
- Refereed an average of 12 publications and research grant applications per year from 1983-2000

Selected publications (particularly relevant to continental shelf delineation)

Haworth, R.T. 2004. Determination of the Foot of the Continental Slope by Means of Evidence to the Contrary to the General Rule. In *Legal and Scientific Aspects of Continental shelf Limits*, edited by M.H. Nordquist, J.N. Moore and T.H. Heidar, Martinus Nijhoff Publishers, p.121-137.

Macnab, R. and Haworth, R. 2001. Earth Science and the Law of the Sea: Keys to Canada's Offshore Energy and Mineral Resources beyond 200 Nautical Miles. Geoscience Canada, Vol.28, No. 2, p.79-86.

Harworth, R.T. 2000. *Continental Shelf Limits: The Scientific and Legal Interface*, edited by P.J. Cook and C.M. Carleton, Oxford University Press (Editorial Board and contributor)

Haworth, R.T. 1999. The Continental Shelf Commission. In Oceans Policy: New Institutions, Challenges and Opportunities, edited by M.H. Nordquist and J.N. Moore, Martinus Nijhoff Publishers, p. 147-169.

Haworth, R., Macnab, R. and Monahan, D. 1996. Hydrographic and Geological Considerations for Implementing Article 76 off the Arctic and Atlantic Coasts of Canada: A Case Study. Proceedings of the Second International Conference on Geodetic Aspects of Law of the Sea (GALOS), p. 379-397.

Haworth, R., Macnab, R. and Monahan, D. 1996. UNCLOS: Challenge of the Decade for Marine Geoscience? Canadian Geophysical Union Annual Meeting, Calgary.

Haworth, R., Macnab, R. and Monahan, D. 1995.Effects of Observational and Interpretive Uncertainties in Determining the Outer Limit of the Continental Shelf According to Article 76 of the Law of the Sea. International Union of Geodesy and Geophysics, General Assembly, 1995, Vol. 21, Week B, p.58 (Paper GB42B-10).

United Nations, 1993. *The Law of the Sea — Definition of the Continental Shelf: An Examination of the Relevant Provisions of the United Nations Convention on the Law of the Sea*. United Nations Publication E.93.V.16, New York (contributor).

Leadership and management of resource-related projects, marine surveys, geophysical and marine science

- Led Canadian delegations regarding resource-based sustainable development, notably to South Africa for the establishment of the African Mining Partnership as a contribution to New Partnerships for African Development (NEPAD), and to Chile on the "Safe Use Principle" in the export of minerals (2000-2003).
- Managed a comprehensive program of hydrocarbon resource assessment, geophysical, terrain science and hazard mapping of the whole of Canada, and the marine geoscience of Canada's offshore areas, and directed Natural Resources Canada's contribution to the federal responsibilities under Canada's Oceans Act (1990-2000).
- Managed the development and conduct of the entire geophysical program of the British Geological Survey (BGS), including the professional development of the 150 geophysical and data management staff of BGS (1983-1990).
- Coordinated international geophysical contributions to the Appalachian/ Caledonide project of the International Geological Correlation Program (IGCP Project 26) including co-authorship of the geophysical maps of the Canadian Appalachians (onshore and offshore) and their interpretation (1974-1987).
- Managed the Geological Survey of Canada's marine geophysical survey program of the Atlantic continental margin, including personal participation in the surveys, subsequent data compilation and map publication (1969-1983).

Martin Vang Heinesen (Denmark)

Personal Data

Name:	Martin Vang Heinesen
Date of Birth:	17 August 1953
Place of Birth:	Toftir, Faroe Islands

Education

1987	Cand.Scient. degree (Masters/PhD equivalent) in Geology, Copenhagen University
1977-1979	Physical Geography studies at Copenhagen University
1976-1977	Mathematics and Physics studies at Copenhagen University

Employment record

2003-	Project Manager of the Continental Shelf Project of the Kingdom of Denmark, with respect to the Faroe Islands
2000-2003	Director of the Faroese Geological Survey
1993-1997	Director of the Faroese Petroleum Administration
1987-2000	Head of Geological Department at the Museum of Natural History, Faroe Islands

Miscellaneous Qualifications and Special Tasks

2008-2011	Co-Chairman of the Task Force that prepared the partial submissions of the Kingdom of Denmark to the Commission on the Limits of the Continental Shelf in respect of the northern and southern Continental Shelf, respectively, of the Faroe Islands
2006-2008	Member of the IGC-33 Science Committee, Oslo, Norway
2003-	Member of the Steering Committee of the Continental Shelf Project of the Kingdom of Denmark, in respect of the Faroe Islands
2000-2003	Member of the Board, *Sindri* — Joint Geoscience Work Programmes for Hydrocarbon Exploration Licensees within the Jurisdiction of the Faroes
1995-2000	Member of the Board, Geological Survey of Denmark and Greenland (GEUS)
1992-2000	Head and Coordinator of the Governmental Technical Work during planning and establishment of the Faroese Hydrocarbon Exploration Regime, including the establishment of the Faroese Petroleum Administration and the Faroese Geological Survey, in addition to the planning and execution of the first Faroese exploration licensing round
1992-1997	Member of the Faroese Hydrocarbon Planning Commission

1991- Member of the Delegation of the Kingdom of Denmark in charge of continental shelf delimitation negotiations between the Faroe Islands and neighbouring coastal States, within and beyond 200 M

1987- External lecturer in Geology, University of the Faroe Islands

Recent Publications and Presentations

Heinesen, M.V. (presenter), F. Mørk, B. Kunoy, and J. K. Neish. Continental Shelf Project of the Kingdom of Denmark — Area north of the Faroe Islands. International Geological Congress, IGC33, Oslo, 6-14 August, 2008.

Heinesen, M. V. and B. Kunoy (presenters) *et al.* Presentation of Partial Submission of the Government of the Kingdom of Denmark together with the Government of the Faroes to the Commission on the Limits of the Continental Shelf in respect of the Continental Shelf North of the Faroe Islands. United Nations Headquarters, New York, 27 August 2009.

Kunoy, Bjørn, Heinesen, Martin V. and Mørk, Finn (2010). Appraisal of Applicable Depth Constraint for the Purpose of Establishing the Outer Limits of the Continental Shelf. Ocean Development & International Law, 41: 4, 357-379.

Heinesen, M. V. and B. Kunoy (presenters) *et al.* Presentation of Partial Submission of the Government of the Kingdom of Denmark together with the Government of the Faroes to the Commission on the Limits of the Continental Shelf in respect of the Southern Continental Shelf of the Faroe Islands. United Nations Headquarters, New York, 31 March 2011.

Heinesen, M.V. (presenter), and F. Mørk. The Continental Shelf Project of the Kingdom of Denmark: The Continental Shelf of the Faroe Islands. GAC-MAC Annual Meeting, Ottawa, 25-27 May 2011.

Heinesen, M.V. (presenter), and F. Mørk. The Determination of the Foot of the Continental Slope at its Base: Lessons Learned. International Workshop: Sharing Experiences on the Delineation of the Outer Limit of the Continental Shelf, Buenos Aires, 12-14 October 2011.

Emmanuel Kalngui (Cameroon)

Date and place of birth:

17 January 1956, Douala

Place of origin:

Province of Littoral, Department of Sanaga-Maritime, Arrondissement of Ngambé, District of Massock Song-Loulou, Canton of Logkat, Village of Saha

Highest degree earned:

Engineering degree in Petroleum Geology

Specialty in the engineering and field:

Geology of oil and gas prospecting

Exploitation

Civil service grade:

General engineer in the corps of mining and geological engineers; civil service category A2, grade IMG, index No. 1115

Date of entry on duty in the civil service:

10 November 1982

Positions held

31 December 1987-16 October 1998:

Deputy Chief, Mining Technology and Conservation Service

Since 16 October 1998:

Chief, Hydrocarbons Exploitation Control Service

Certified Mine Inspector, appointed by decision No. 706/MINMEE/DMTNI/SAT of 22 October 1990

Inspector of classified establishments such as service stations, factory boilers, etc.

Academic background

Degree	Specialty	Date received	Name of establishment
Certificat d'Études primaires élémentaires (primary school certificate)	Primary school	1967	Primary school of the Catholic Mission of Dibamba, Douala 3
Brevet d'Études du premier cycle (lower secondary school certificate)	Lower secondary school studies, 1963-1972	1972	Collège Libermann, Douala

Degree	Specialty	Date received	Name of establishment
Probatoire, series C (prerequisite for the baccalaureate)	Upper secondary school studies, 1973-1974	1974	Collège Libermann, Douala
Baccalauréat (baccalaureate), series C	Upper secondary school studies, 1974-1975	1975	Collège Libermann, Douala
	Mathematics-Physics Section	1976	University of Yaoundé, Faculty of Sciences
	Russian language	1977	Preparatory Institute of the Russian Language, Baku, USSR
Engineering degree in Petroleum Geology	Geology of oil prospecting and exploitation	1982	I.M. Gubkin Institute of the Petrochemical and Gas Industry (*Grande École*, or higher school), Moscow, USSR
Russian language certificate	Russian language	1982	I.M. Gubkin Institute of the Petrochemical and Gas Industry (*Grande École*, or higher school), Moscow, USSR

Professional training

Year	Type of course	Duration	Topic	Place
1983	Training	9 months	– Petroleum geology – Field technology – Introduction to the petroleum business	Elf-Serepca Company, B.P. 2214, Douala
1986	Seminar	1 month	Calculation of petroleum reserves	I.M. Gubkin Institute of the Petrochemical and Gas Industry, Moscow, USSR
1992	Training	1 month	PRIMA	Institute of Management, Yaoundé
1993	Training	1 month	Project management	Institute of Management, Yaoundé
1994	Training	1 week	Introduction to the CIMENCAM cement company	CIMENCAM, Douala, B.P. 1323
1994	Training	1 month	Introduction to the SONEL electric company	SONEL Centre, Ombe/SW

Year	Type of course	Duration	Topic	Place
1999	Seminar	1 week in April	Seminar on loss management in the transport of hydrocarbons and in petroleum facilities, given by Hydrac	Hydrac headquarters in Douala
2000	Seminar	1 week in July	Seminar on the application of the new petroleum regime in Cameroon, given by Beicip Franlap of France	National Hydrocarbons Corporation (SNH) headquarters, Yaoundé
2000	Seminar	1 week in November	Seminar on slope-basin depositional systems, given by Phillips Petroleum	Hilton Hotel, Yaoundé
2000	Training	3 months	Bilingual training programme: The New Cambridge English Course	Pilot centre, Yaoundé
2001	Training	1 week in February	Course on seismic attributes and AVO, given by Geo Experts (Phillips)	Hilton Hotel, Yaoundé
2001	Training	1 week in August	Course on mapping subsurface structure, given by Oil and Gas Consulting International (USA)	Hilton Hotel, Yaoundé
2001	General Assembly of the International Oil Pollution Compensation Fund (IOPC Fund)	1 week in October	Presentation, to the IOPC Fund Executive Committee, of letters whereby the State of Cameroon terminated its membership of the 1971 Fund and became a member of the 1992 Fund	London
2003	Ditto	Ditto	Active participation	London

Career profile

Year	Department	Duties	Other information
1982	Department of Mines and Geology		Entry on duty: 10 November 1982
December 1983-December 1984	Department of Mines and Geology	Assigned to the gold project in East Cameroon	East Cameroon gold project with France's Bureau of Geological and Mining Research (BRGM)
January 1984-1985	Department of Mines and Geology	Assigned to the Haut-Lom project	Geological and mining research project in the Haut-Lom/Adamaoua with France's BRGM
1987	Department of Mines and Geology	Assigned to the project in the Gulf of Mamfe	Ministerial mission for geological and mining research in the Gulf of Mamfe
31 December 1987	Department of Mines, Technology and Industrial Impacts	Appointed Deputy Chief, Mining Technology and Conservation Service	Areas of responsibility: – Quarry exploitation – Mining research – Mining impacts – Mining taxes – Mining regulations
2 months in 1996	Department of Mines, Technology and Industrial Impacts	Headed a geological and mining research mission near Lomié, focusing on nickel and cobalt	Provided technical assistance for the Ministry of Mines, Water and Energy to Geovic Cameroon, S.A.B.P. 5839, Douala (USA-based corporation)
October 1995, 1996, April 1998	Department of Mines, Technology and Industrial Impacts	Headed geological expeditions (missions) in the gold-bearing East Province	With the following companies: – Overseas (South Africa) – Burmex (Canada) – Global Mining (USA) – Bema Gold (Canada)

Year	Department	Duties	Other information
25 March 1998-15 April 1998	Department of Mines, Technology and Industrial Impacts	Geological and mining research in the permit 66 area, Kambele (belonging to Bema Gold)	Bema Gold (Canada)
16 October 1998	Department of Mines and Geology	Appointed Chief of the Hydrocarbons Exploitation Control Service	Areas of responsibility: – Cases of crude oil theft being prosecuted in the Kole, Moudi and Ebome courts – Security of offshore exploitation – Marine pollution by hydrocarbons – Accounting and statistics on hydrocarbons produced by Elf, Pecten and Perenco – Mining revenues
2005	Department of Mines and Geology	Appointed Chief of Service for the monitoring of the exploitation of oilfields and gas fields	Ditto

Other information

- Elements of strategic prospecting in the Haut-Lom/Adamaoua (Methods and results)
- Calculation of petroleum reserves: mining legislation and regulations in Cameroon

Languages (written, read and spoken)

Bassa, Douala, French, English, Russian

Stays abroad

Soviet Union, United States of America, Poland, Czechoslovakia, Germany, Belgium, France, Great Britain, Netherlands, Nigeria

Lu Wenzheng (China)

[Original: Chinese]

Personal information

Gender:	Male
Date of birth:	25 June 1944
Place of birth:	Chongqing, China
Academic expertise:	Marine geophysics
Employer:	Second Institute of Oceanography, State Oceanic Administration
Postal address:	36 Baochu North Rd., Hangzhou City, Zhejiang Province, China
Postal code:	310012
Telephone:	0086-571-81963180 (office), 13605705540 (mobile)
Facsimile:	0086-571-88071539
E-mail:	lu_wenzheng@163.com

Current positions

Member, Commission on the Limits of the Continental Shelf

Professor, Research Fellow and Supervisor of Ph.D. Candidates, Second Institute of Oceanography, State Oceanic Administration

Adviser, China Ocean Mineral Resources Research and Development Association

Member, Expert Group on the Deep Sea Vehicle Technology and Equipment Project under the Chinese National High Technology Research and Development Programme

Educational background

September 1961-September 1967	Department of Geophysical Prospecting, Beijing College of Geology
September 1975-December 1976	College of Chemical Engineering, East China University of Science and Technology
September 1991-September 1992	Visiting scholar, Helmholtz Centre for Ocean Research (GEOMAR), Kiel, Germany

Professional experience

1970-1977	Seawater Desalination Centre, Second Institute of Oceanography, State Oceanic Administration
1978-present	Centre for Geology and Geophysics, Second Institute of Oceanography (served as Director of Centre from 1986 to 1990)

1996-2000	Chief scientist responsible for research into ocean mineral resource prospecting, China Ocean Mineral Resources Research and Development Association (COMRA)
1997-present	Member, Commission on the Limits of the Continental Shelf
2001-2003	Member, Expert Group on Marine Resources Exploitation Technology, China National High Technology Research and Development Programme (863 Programme)
2004-2005	Member, Expert Committee on Marine Resources and the Environment, 863 Programme
2009-present	Adviser, COMRA
2011-present	Member, Expert Group on the Deep Sea Vehicle Technology and Equipment Project, 863 Programme

Representative publications

A. Research papers:

1. Survey report on the DY95-6 and 8 Chinese ocean mineral resources exploration and research expeditions (lead author)
2. Survey report on the DY95-10 Chinese ocean mineral resources exploration and research expedition (lead author)
3. Survey report on the DY95-11 Chinese ocean mineral resources exploration and research expedition (lead author)
4. General report on the ocean mineral resources exploration and research project under the ninth five-year plan (item 02) (lead author)
5. Compilation of documents for the United Nations Commission on the Limits of the Continental Shelf (first assistant editor)
6. Report on research under the 863 Programme into key technology for multiple-use unmanned deep-sea remotely operated vehicle (ROV) systems (issue team leader)

B. Monographs:

1. *Polymetallic Nodule Deposit Geology in the China Pioneer Area of the Pacific*, Lu Wenzheng et al., China Ocean Press, 2008 (in Chinese)
2. Chapter 14: Characteristics of the distribution and control factors of polymetallic nodules in the western region of the Clarion-Clipperton Fracture Zone (China Pioneer Area), in: *Establishment of a Geological Model of Polymetallic Nodule Deposits in the Clarion-Clipperton Fracture Zone of the Equatorial North Pacific Ocean*, International Seabed Authority, 2009
3. *Outer Limits of the Continental Shelf: Interface of Law and Science* (translation), Lu Wenzheng et al., China Ocean Press, 2011 (in Chinese)
4. Chapter 6: Spatial decision support system modelling, in: Huaiyang Zhou, Lu Weizheng, *A Geological Model of Polymetallic Nodule Deposits in the Clarion-Clipperton Fracture Zone, ISA Technical Study No. 6*, International Seabed Authority, 2010

C. Representative academic articles:

1. Characteristics of magnetic lineation and tectonic evolution of the South China Sea basin, Lu Wenzheng et al., in: *Acta Oceanologica Sinica*, Vol.9, No. 1, 1987 (in Chinese)

2. Characteristics of the magnetic field of the south east Pacific and its tectonic evolution, Lu Wenzheng et al., in: *Proceedings of the First Symposium on Antarctic Research*, Shanghai Science and Technology Press, 1989 (in Chinese)

3. Variations in seafloor topography and its tectonic origin in the eastern and western parts of the Chinese pioneer area, Lu Wenzheng, in: *Proceedings of the COMRA Tenth Anniversary Symposium*, China Ocean Press, 2001 (in Chinese)

4. Characteristics of polymetallic nodule deposits in the Chinese pioneer area and the exploration strategy for the third phase, Lu Wenzheng, in: *Proceedings of the COMRA Tenth-Anniversary Symposium*, China Ocean Press, 2001 (in Chinese)

5. Characteristics of the distribution of cobalt-rich crusts in the central Pacific seamount zone and preliminary evaluation of prospects for their exploitation as resources, Lu Wenzheng, in: *Proceedings of the COMRA Tenth-Anniversary Symposium*, China Ocean Press, 2001 (in Chinese)

6. Characteristics of the distribution and control factors of polymetallic nodules in the west region of CCFZ (China Pioneer Area), Lu Wenzheng, in: *Engineering Sciences, vol. 2*, Chinese Academy of Engineering, 2004

7. Opportunities for and challenges to the exploitation of mineral resources in the international seabed area, Lu Wenzheng et al., in: *Journal of Central South University, Science and Technology*, Vol. 42, 2011 (in Chinese)

Mazlan Bin Madon (Malaysia)

Current Position

Chief Geoscientist,

PETRONAS (Malaysia's National Petroleum Company)

Kuala Lumpur, Malaysia.

Biodata

Date of Birth: 6 February 1961

Place of Birth: Johor, Malaysia

Education

1996	Doctor of Philosophy: Earth Sciences (Tectonics & Basin Analysis), University of Oxford, United Kingdom
1992	Master of Science: Geology (Sedimentology), University of Malaya, Malaysia
1984	Bachelor of Science (Hons.) in Geology, University of Southampton, United Kingdom

Professional Profile

Dr Madon is a Geologist with 27 years working experience in the petroleum industry, primarily in a research (R&D) environment, specializing in regional basin analysis and modelling, sedimentology, tectonics, structural geology, and reservoir geological studies. He has conducted many basin studies and exploration evaluations of international ventures.

He currently holds the position of Chief Geoscientist, the highest technical position in PETRONAS, Malaysia's national petroleum company, and acts as Head of CO2 Storage Department. He is also leading a technical team to conduct CO2 Sequestration studies for natural gas fields in offshore Malaysia.

He also serves as Head for Research Geology in PETRONAS' Geoscience Skills Group Committee, which oversees and advises on matters related to geoscience skills development and career progression for geoscientists in the company.

Dr Madon has participated in various international conferences and authored many technical papers on geology, sedimentology, and petroleum geology in national and international journals. He is also the main author in Petronas' publication on "Petroleum Geology and Resources of Malaysia" published in 1999, which has become a major source of reference for petroleum geologists in the country.

Other Relevant Experiences

In 1987, Dr Madon participated as an onboard geoscientist on the RV SONNE in the BGR cruise SO-49 in the South China Sea, exploring the Dangerous Grounds and NW Borneo Trough.

In 2008-2009, Dr Madon was involved in the Malaysian Continental Shelf Project as PETRONAS' geological expert, who was tasked to review and provide

geological/geophysical inputs to the Malaysia-Vietnam joint submission to the UN Commission on the Limits of the Continental Shelf (CLCS).

In 2008-2010, he served as the Editor-in-Chief of the PETRONAS Technology Journal. He has also served in the Petronas Research Publications Committee.

Between 2006 and 2009, Dr Madon served as adjunct lecturer and supervisor for undergraduate and postgraduate students at the PETRONAS University of Technology, University of Science, Malaysia and University of Malaya.

In 2010, Dr Madon was appointed as a member of the Board of Study to the University of Malaya's MSc Petroleum Geoscience Programme and in 2011 in the Industry Panel for PETRONAS University of Technology's MSc in Petroleum Geoscience programme.

He has been a team leader in designing and delivering in-house courses in PETRONAS on basin analysis (levels 1, 2 and 3) and sedimentology, including geological field trips in Malaysia.

In 2011, Dr Madon was awarded the Best Trainer — Role Model for Geoscience by the Petronas Geoscience Committee.

Affiliations

1. Geological Society of Malaysia (GSM)

Life member since 1992

Vice President (2010/11)

Council Member (1991/92, 1998/99, 2009/10-present)

Chairman of Stratigraphy and Sedimentology Working Group (1991/92)

GSM Editorial Advisory Board Member (1993-present)

Assistant Secretary (1998/99)

2. Institute of Geology Malaysia (IGM)

Member since 1997

Council Member (1997/98, 1998/99)

Chairman of Oil & Gas Technical Committee (1997/98, 1998/99)

3. American Association of Petroleum Geologists (AAPG)

Active Member

Alternate member, House of Delegates (2010-2012)

Publications

Main author and co-editor of book, "The Petroleum Geology and Resources of Malaysia", published in 1999, by PETRONAS. (contributed 14 out of 27 chapters).

Madon, M., 1992. Depositional setting and origin of berthierine oolitic ironstones in the Lower Miocene Terengganu Shale, offshore Peninsular Malaysia. Jour. Sed. Petrology, 62, 899-916.

Madon, M., 1992. Note on dolerite, rhyolite, and granophyre in the basement of the Tenggol Arch, offshore Terengganu. Geol. Soc. Malaysia Bull., 31, 133-143.

Madon, M., 1994. The stratigraphy of northern Labuan, NW Sabah Basin, East Malaysia. Geol. Soc. Malaysia Bull., 36, 19-30.

Madon, M., 1994. Depositional and diagenetic histories of reservoir sandstones in the Jerneh Field, central Malay Basin. Malaysia. Geol. Soc. Malaysia Bull., 36, 31-53.

Ngah, K., Madon, M., and Tjia, H.D., 1996. Role of pre-Tertiary basement faults in the formation of Malay and Penyu Basins, offshore Peninsular Malaysia. In: Hall, R. & Blundell, D.J., eds., Tectonic Evolution of Southeast Asia. Geol. Soc. London Spec. Publ. No., 62, 281-289.

Madon, M., Azlina Anuar and Wong, R., 1997. Structural evolution, maturation history and hydrocarbon potential of the Penyu Basin, offshore Peninsular Malaysia. In: Howes, J.V.C and Noble, R.A, eds., Proc. IPA Petroleum Systems of SE Asia and Australasia, Jakarta 21-23 May 1997, Indonesian Pet. Assoc., Jakarta, 403-424.

Madon, M., 1997. Analysis of tectonic subsidence and heat flow in the Malay Basin (offshore Peninsular Malaysia). Geol. Soc. Malaysia Bull., 41, 95-108.

Madon, M., 1997. Sedimentological aspects of the Temburong and Belait Formations, Labuan (offshore west Sabah). Geol. Soc. Malaysia Bull., 41, 61-84.

Madon, M., 1997. The kinematics of extension and inversion in the Malay Basin, offshore Peninsular Malaysia. Geol. Soc. Malaysia Bull., 41, 127-138.

Madon, M. and Watts, A.B., 1998. Gravity anomalies, subsidence history, and the tectonic evolution of the Malay and Penyu Basins. Basin Research, 10, 375-392.

Madon, M., 2006. Overpressure history of the Malay Basin, offshore Peninsular Malaysia. Geol. Soc. Malaysia Bull., 49, 135-144.

Madon, M., Jiu-Shan Yang, Abolins, P., Redzuan Abu Hassan, Azmi M. Yakzan & Saiful Bahari Zainal, 2006. Petroleum systems of the Northern Malay Basin. Geol. Soc. Malaysia Bull., 49, 125-134.

Madon, M., 2007. Overpressure development in rift basins: an example from the Malay Basin, offshore Peninsular Malaysia. Petroleum Geoscience, Vol. 13 2007, pp. 169-180.

Madon, M.& Abdul Hadi Abd Rahman, 2007. Penecontemporaneous deformation in the Nyalau Formation (Oligo-Miocene), central Sarawak. Geol. Soc. Malaysia, National Geoscience Conference 2007, 7-9th June, Kota Kinabalu. Geol. Soc. Malaysia Bull., 53, 67-73.

Madon, M., 2010. Submarine mass-transport deposits in the Semantan Formation (Middle-Upper Triassic), central Peninsular Malaysia. Geol. Soc. Malaysia Bull. 56, 15-26.

Madon, M., Zainol Affendi Abu Bakar & Hasnol Hady Ismail, 2010. Jurassic-Cretaceous fluvial channel and floodplain deposits along the Karak-Kuantan Highway, central Pahang (Peninsular Malaysia). Geol. Soc. Malaysia Bull., 56, 9-14.

Conference Presentations/Abstracts

Madon, M. and Kamaludin Hassan, 1991. Quaternary deposits near Pantai Remis, NW Peninsular Malaysia, and significance of the Pleistocene-Holocene unconformity. 3rd Meeting of the IGCP Project 296, Phuket, Thailand, 20-21 October 1991.

Madon, M., 1992. Diagenesis and porosity reduction during burial of upper Miocene sandstones, Jerneh-3 well, Malay Basin. GSM Annual Conf., Kuantan, 9-10 May 1992.

Madon, M., 1993. Structural evolution of Penyu Basin, offshore Peninsular Malaysia. Geol. Soc. London Conf. "Tectonic evolution of SE Asia", London, 7-8 Dec 1993.

Madon, M., 1996. Gravity anomalies, isostasy, and the tectonic evolution of the Malay and Penyu Basins. Poster at Geol. Soc. Malaysia Petroleum Geol. Conf. 1996, 9-10 Dec, Kuala Lumpur. (abst.)

Madon, M., 1996. Sedimentological aspects of the Temburong and Belait Formations, Labuan (offshore west Sabah). Poster at Geol. Soc. Malaysia Petroleum Geol. Conf. 1996, 9-10 Dec, Kuala Lumpur.

Madon, M., Azlina Anuar and Wong, R., 1997. Structural evolution, maturation history and hydrocarbon potential of the Penyu Basin, offshore Peninsular Malaysia. IPA Symposium on Petroleum Systems of SE Asia and Australasia, Jakarta 21-23 May 1997, Indonesian Pet. Assoc., Jakarta.

Madon, M., 1998. An overview of the tectonic settings of Tertiary sedimentary basins of Malaysia. Poster at the Ninth Regional Congress on Geology, Mineral and Energy Resources of Southeast Asia — GEOSEA '98, 17-18 August 1998, Kuala Lumpur.

Madon, M., Abolins, P., Redzuan Abu Hassan, & Azmi M Yakzan, 2004. Petroleum systems of the North Malay Basin. Petronas Geoscience Conference 2004. 23-24 August 2004, Marriott Putrajaya, paper 16.

Madon, M., Abolins, P., Redzuan Abu Hassan, Azmi M Yakzan, Jiu-Shan Yang & Saiful Bahari Zainal, 2004. Petroleum systems of the North Malay Basin. GSM Petroleum Geology Conf. & Exhibition 2004, 15-16th Dec 2004, Istana Hotel, Kuala Lumpur, Poster No 9.

Madon, M., 2005. Overpressure development in rift basins: an example from the Malay Basin, offshore Peninsular Malaysia. International Conference "Return to Rifts — the next wave! Fresh Insights into the Petroleum Geology of Global Rift Basins, 5-7th April 2005, Geological Society of London, Burlington House.

Madon, M., Kim Cheng Ly, & R. Wong, 2007. The structure and stratigraphy of deepwater Sarawak: implications for the tectonic evolution of the NW Borneo continental margin. AAPG Annual Conv., Long Beach, Ca., 1-4 April, 2007.

Madon, M., Hasnol Hady Ismail, & Zainol Affendi Abu Bakar, 2008. Turbidites and mass transport deposits in the Semantan Formation (Middle-Upper Triassic), central Peninsular Malaysia. AAPG Annual Conv., San Antonio, Tx., April 20-23, 2008.

Madon, M, Abolins, P, & Abu Hassan, R., 2009. The Northern Malay Basin: Petroleum Systems and Remaining Potential. AAPG Annual Conv., Denver, Co., June 7-10.

Madon, M., Ku Rafidah Ku Shafie, Hasnol Hady Ismail, Zainol Affendi Abu Bakar, Redzuan Abu Hassan and Amita Mohd Ali, 2010. Facies and Bedding Styles in Basin-Floor Fan Deposits of the West Crocker Formation, West Sabah: Implications for Deepwater Reservoir Facies Distribution. GSM Petroleum Geology Conf. & Exhibition 2010, 29-30th March 2010, Kuala Lumpur Convention Centre.

Estevao Stefane Mahanjane (Mozambique)

Desired occupational field:

Member of the CLCS

Geoscience (Geology & Geophysics)

Objectives:

Accept challenges where my knowledge in Marine Geology/Geophysics and hydrography can fully contribute in the matter of the article 76 UNCLOS

Work Experience

Dates: 2004 onwards

Occupation or position held Main Activities and responsibilities

Expertise on Article 76 of the United Nations Convention on Law of the Sea (UNCLOS):

- Member of the Mozambican Task force for delineation of the outer limits of the continental shelf;
- Member of the Mozambican delegation to the United Nations (New York) for presentation to the CLCS of the extended continental shelf of Mozambique, 31 March 2011;
- Preparation and presentation to the CLCS of the Submission by the Republic of Mozambique, New York, 31 March 2011 (refer to CLCS/70);
- Key person for the preparation of the technical and scientific information, the dossier for the Mozambique extended continental shelf beyond 200M according with the UNCLOS-82 (requirements of article 76 and STG), submitted to the United Nations in July 2010;
- Key person for the preparation of the preliminary Information submitted to the United Nations in 2009, regarding to the Mozambique extended continental shelf beyond 200 M according to the technical and scientific requirements of article 76;
- Member of the Mozambican delegation to the United Nations (New York) for the submission of the preliminary information, held on the 11 May 2009;
- Appointed data manager within the Mozambique committee of experts for implementing article 76 of UNCLOS to delineation of outer limits of the extended Continental Shelf;
- Advisor for Mozambique on planning and designing of additional geophysical data acquisition, processing, and interpretation to fulfil the requirement of Article 76 of UNCLOS: include Gravity, Magnetics and (Multi-channel Reflexion & Refraction) 2D seismic data;

Training Courses and Seminars:

Organizer and 2-days seminar in Maputo on the subject of article 76 of UNCLOS — Maputo, 29-30 September 2008

UNEP Shelf Programme Desk-top Preparation Workshop-Part 1 and 2

UNEP, GIGIRI, Nairobi, 14-24 March 2006

Dates: June 2001 onwards

Occupation or position held Main Activities and responsibilities:

Expertise in oil industry (Geosciences):

Senior Geoscientist (Geophysics and Geology)

- 2003-2010 — Seismic interpretation IN-HOUSE and responsible for the mentoring junior staff;
- Loading and quality control of 2D and 3D seismic data, identifying and following with data enhancement;
- Management of Petroleum database (Seismic and Well digital data);
- Data interpretation including geological correlations and sequence stratigraphy analysis in sedimentary basins and geological modelling;
- Mentoring tutorial to Ministry of Mineral Resource staff;
- Evaluation of Petroleum Potential in Mozambique sedimentary basins;
- Planning and development of resources assessment methods;
- Petroleum resource assessment on regional and national scale;
- Preparation of documentation and running the 2nd, 3rd and 4th Licensing Rounds for Oil and Gas Exploration and Production;
- Evaluation of company applications for new exploration licences;
- Licensing and Negotiations for Petroleum Concession awards;
- Providing technical advice to Ministry of Mineral Resources;
- Represented the National Petroleum Institute (INP) in various geoscientific programmes involving oil industry;
- Project team leader for Reserves evaluation in the Gas Fields in the continental margins.

On-the-job training

2007/2006

Exploration Project assisted by the Petroleum Geosciences Service (PGS) — Reservoir (United Kingdom):

- Seismic Interpretation, Prospect generation & Ranking of about 80,000 line kms of 2D seismic from the offshore Mozambique Basin;

- Two months Courses: Sequence stratigraphy-Level 1 & 2; Introduction to Wellsite Geological Operations. Institute Teknologi Petroleum Petronas. Kuala Lumpur, Malaysia;
- Drilling Operations with Petronas: Evaluation of the Geological and Geophysical (G&G) data from the daily drilling reports and wellsite Geological Reports for decision make process, including compiling all information from G&G, Geopressure, wireline, Petrophysics, drilling parameters for the Final Well Report.

2005

2D land seismic Acquisition (including pre-processing and quality Control in the field) with SASOL (South Africa).

2004

3 months secondee for the G and G studies in the offshore Zambezi Delta, Mozambique with PETRONAS, based on seismic interpretation of about 5,000 line km 2D seismic for the prospect identification and ranking.

2004

Participated in the extensive Exploration Project together with Anadarko International (USA), Vanco (USA) and Norsk Hydro (Norway):

- 2D seismic interpretation of about 4000 line kms from the offshore Rovuma Basin (Mozambique) for the prospect and leads generation focusing the evaluation of the Petroleum prospectivity.

2004-2003

Wellsite geologist in the onshore Exploration/Production drilling Campaign in the Pande-Temane Gas Field (Mozambique).

Employer

National Petroleum Institute (INP)

Maputo, Mozambique

Government Institution (Petroleum Sector)

Dates: June 2000 onwards

Teaching Assistant

Occupation or position held Main Activities and responsibilities

Lecturer in Geosciences: General Geology and Geomorphology, Marine Geology, Geo-statistics and Geo-mathematics, Applied Geophysics (including seismic acquisition, processing and interpretation)

Employer

Eduardo Mondlane University

Maputo, Mozambique

Type of business or sector

Tertiary Education

Education and Training

Dates: 2010-2010 (Ongoing):

Philosophy Doctorate in Exploration Geophysics (Geosciences)

Skills covered

Explorationist

Name and Type of organization providing education and training

Leibniz University Hannover (LUH)

Institute of Geology

Germany

Dates: 2002

Title of qualification awarded Skills covered Emphasis

Bachelor of Science Honours in Exploration Geophysics

Exploration Geophysics

Marine Geology, Exploration Geophysic Methods, Reservoir Engineering, Petroleum sedimentology

Name and type of organization providing education and training

University of Cape Town, South Africa

Dates: 1994-1999

Title of qualification awarded skills covered

Diploma, Geology

Emphasis: Exploration and applied geology

Name and type of organization providing education and training

Eduardo Mondlane University

Maputo, Mozambique

Tertiary Education

Affiliations:

Society of Exploration Geophysics (SEG)

Language(s) Self-assessment

Portuguese

Understanding: Listening: Proficient User; Reading: Proficient User

Speaking:

Spoken Interaction: Proficient User

Spoken production: Proficient User

Writing:

Proficient User

English

Understanding: Listening: Proficient user; Reading: Proficient User

Speaking:

Spoken Interaction: Proficient User

Spoken production: Proficient User

Writing:

Proficient User

German

Understanding: Listening: Basic user; Reading: Basic User

Speaking:

Spoken Interaction: Basic User

Spoken production: Basic User

Writing:

Basic User

Computer skills and competences

Competent with most Microsoft Office Programmes and some experience with HTML, Kingdom Suite, GeoGraphix, Surfer 8, Geocap, Geoquest.

Additional Information

Publications

1. Ongoing PhD Project at Leibniz University of Hannover, Germany: Geotectonic History and Petroleum System Analysis for the Northern Mozambique Basin, Basin Modelling Concept;
2. Mahanjane, E., (submitted to journal in December 2011) — A Geotectonic History of the northern Mozambique Margin including the "Beira High" (off Zambezi Coast) — A Contribution for Understanding its Development;
3. Reichert, C., Sonke, N., Adam, J., Aslanian, D., Roest, W., Mahanjane, S., James, E.T., Bargeloh, H., Behrens, T., Martin, B., Ehrhardt, A., Heyde, I., Jokat, W., Kallaus, G., Klingelhöfer, F., Moulin, M., Kewitsch, P., Schrader, U., Schreckenberger, B., and Sievers, J. (2008) — Cruise Report, BGR07. R/V MARION DUFRESNE CRUISES MD 163 & MD 164. PROJECT MOBAMASIS.Bundesanstalt für Geowissenschaften und Rohstoffe (BGR);

4. Mahanjane, E., Achimo, M., and Nhanale, E. (2007) — The interpretation of the syn-rift sediments from Mazenga Graben to Palmeira Graben, Type of Lithologies based on well logs. Geological Department, UEM;

5. Mahanjane, E., Achimo, M., and Mendes, L. (2007) — The study of the Grudja (Upper Cretaceous) sediment distribution in the offshore Chidenguele Graben. Geological Department, UEM;

6. Mahanjane, E., Achimo, M., and Paulo, A. (2007) — The study of Geotectonic Structure of Buzi. Geological Department, UEM;

7. Mahanjane, E., Mahanjane G., and Mendes L., (2004) — Assessment of Cultural-economic and environmental impact to Community of Chibuto Heavy sand Project;

8. Mahanjane, E. (2001) — Manual of Mineral and Industrial Materials. Volumes I & II (Portuguese version), Geological Department, UEM.

Jair Alberto Ribas Marques (Brazil)

Date and place of birth: 07 July 1946, Rio de Janeiro, Brazil

Organization: Brazilian Hydrographic Service (Directorate of Hydrography and Navigation)

Current position: Law of the Sea Technical Adviser

Overview of expertise: Hydrography/Bathymetry

Summary: Hydrographer

Maritime Boundary expertise

Bathymetry/Foot of the continental slope (UNCLOS art.76)

Academic Background

Doctorate Degree in Marine Sciences, Policy, Strategy and Decision Making, Brazilian Naval War College, 1997 and United States Naval War College, 1998

Master Degree in Marine Sciences, Brazilian Naval War College, 1986

Degree in Hydrography and Oceanographic Sciences, Brazilian Hydrographic Service (Directorate of Hydrography and Navigation), 1975

Degree in Marine Sciences, Brazilian Naval Academy, 1971

Professional Activities

2010-2011	General Coordinator of the Operational Group on the outer limits of the Brazilian Continental Shelf;
2010	Adviser for the Brazilian Continental Shelf Survey Project of the Directorate of Hydrography and Navigation;
2004-2008	Adviser on the Maritime Affairs to the Brazilian International Energy Company (PETROBRAS) in the Campus Basin;
2004	Director of the Directorate of the Navy Civilian Personal;
2003	Head of the Organizational Department of the Brazilian Naval Operations Command;
2000-2002	Director of the Brazilian Hydrographic Center;
1999-	Deputy Adviser for Policy & Strategy of the Brazilian Navy Major Staff;
1996	Head of the Brazilian Delegation to the World Fisheries Congress Developing and Sustaining Fisheries Resources — Brisbane — Australia;
1996-	Executive Secretary for the Executive Group for Fisheries in the Brazilian Navy;
1995	Director of the Brazilian Oceanographic Database in the Directorate of Hydrography and Navigation;

1993-1994	Scientific Coordinator during the "Almirante Câmara" Survey of the Brazilian Continental South Margin;
1993-1994	Commander of the Oceanographic Ship "Almirante Câmara" (Brazilian South Margin Surveys);
1989-1992	Member of the Brazilian Delegation, as representative of Secretariat of the Interministerial Commission for the Resources of the Sea, for the International Seabed Authority Meeting, held in New York, EUA and Kingston, Jamaica;
1989-1992	Head of the Executive Committee on the Outer Limit of the Brazilian Continental Shelf;
1989-1992	Under Secretary of the Interministerial Commission for the Resources of the Sea;
1987-1988	Commander of the Hydrographic Ship "Argus", Amazon Surveys;
1987-1988	Head of the Brazilian Navy "Amazon Survey Commission" including the Amazon Deep Sea Fan;
1980-1983	Adviser Officer of the Commander of Naval Operations (CNO) of the Brazilian Navy;
1979-1980	Commander of the Hydrographic Ship "Nogueira da Gama", Amazon Surveys and Amazon Deep Sea Fan;
1975-1980	Technical activities in the Brazilian Hydrographic Service (Directorate of Hydrography and Navigation).

Meeting and Congress

XX Annual Meeting of the Geology and Geophysics Program;

Annual Interchange of Oceanographic Data Seminar;

Extraordinary Meeting of the International Comission for Atlantic Tuna;

4th Meeting of the United Nations for Sustainable Development.

Lectures

2011	Marques, J.A.R., "Brazil beyond 200M" The Brazilian Continental Shelf Delitation-Legal Aspects, presented at the National Conference on the Defense and Matitime Protection;
1999	Marques, J.A.R., "Antarctic and the Brazilian Interests";
1996	Marques, J.A.R., "Capture and Productivity of the Tuna Fish in Brazil";
1991	Marques, J.A.R., "Brazilian Antarctic", presented at the Man of the Year Meeting;
1989	Marques, J.A.R. and Albuquerque, A, "Delimitation of the Brazilian Continental Shelf", presented at the Geophysics Brazilian Society Meeting.

Decorations

Military Medal 3 Stars (40 years of service in Brazilian Navy);

Merit Medal 4 Anchor (more than a thousand days at sea);

Tamandaré Merit Medal (Patron of Brazilian Navy);

Naval Merit Medal — Commander Level;

Cartographic Merit Medal — Commander Level.

Simon Njuguna (Kenya)

Personal details

Profession:	Geologist and Urban and Regional Planner within GIS environs
Date of birth:	March 1970
Languages:	English, Kiswahili (written and spoken)

Summary of key abilities

Has a background that blends well with undertakings that are prescribed in United Nations Convention on the Law of the Sea (UNCLOS) by virtue of his training, current and previous undertakings. He is trained both in physical and developmental sciences, a basis upon which he is able to undertake assignments that may require multi-disciplinary approach but with special interest and ability to map and analyze spatially manifested phenomena. Among the current duties is being one of the technical lead persons in implementation of article 76 of UNCLOS and has been involved in all the undertakings in the process of delineation of Kenya's Continental shelf serving as a geologist and GIS specialist. The played roles include being a lead a person in planning, execution and analysis of data used in putting up the Continental shelf Claim for Kenya. Attendance in a number of trainings and participation in seminars where matters of implementation of UNCLOS have been the main subject, further hasten the ability in handling an assignment in the field. An addition to the list of abilities is strength in making technical presentations to an audience. This is coupled with a high level of interactive type communication backed up by good writing skills.

Educational background

Professional Training

Date:	September 2000-September 2001
Institution:	International Institute of Aero-surveys and Geosciences (the Netherlands)
Award:	Professional Master (PMSc) Geoinformation science and Earth observation

The study was an earth resource and environmental studies based with special emphasis on use of Geographical Information systems (GIS) by application of remotely obtained data

University Level

Date:	October 1996-November 1999
Institution:	University of Nairobi
Award:	Masters of Arts degree in Planning

This is a strategic-management-based type of a course with major focus towards better built up environment and human settlement (physical developments)

Date:	November 1990 to July 1995

Institution:	University of Nairobi
Award:	First class honours Bachelor of Science degree in Geology

Implementation of Article 76 of UNCLOS-Kenya

(a) Data collection

Has been on board two different data collection sea vessels, Bathymetric and Geophysical Data (mainly seismics but with gravity and magnetic) both of which were directed towards Continental shelf delineation process for Kenya.

Bathymetric survey-	Within the Kenyan EEZ area, multibeam-full coverage and individual swaths in depths ranging from 100m to 3500m- Nov to Dec 2007
Seismic survey-	The Kenya offshore area ranging from 200m isobath through to beyond 350 M April-June 2008

(b) Training

• In-house Training , Kenya-	Induction course to UNCLOS and Article 76- year 2006
• United Nations offices In Nairobi	Parts 1 & 2 UNEP Shelf Programme, Desktop Preparation workshop for East African region
• UNEP Shelf Programme-Arendal, Norway	Technical Aspects of the interpretation of marine geophysical data utilizing the shelf delineation software Geocap Technical data requirements and the documentation that needs to accompany the data used in submission (Jan-Feb 2008)
• Geocap Software Training , Kenya	Geocap Software main functionalities and the Shelf Module Sept 2007

(c) Seminars, workshops and meetings

• Buenos Aires Argentina:	Law of the Sea, Resources of the sea bed, Aspects of economics and conservation (March 2006)
• Kingston, Jamaica:	International Sea bed authority meeting (June 2006)-contributed towards drafting regulations for prospecting and exploration of Polymetallic nodules
• Geocap Offices, Oslo, Norway	Geocap training recap and feedback session (May 2007)
• Maputo, Mozambique	Commonwealth Seminar for Coastal Landlocked States of Africa on the Implementation of the 1982 UNCLOS (May 2007)

• New York, USA	A member of the Kenyan delegation to State Parties Meetings on UNCLOS for the 18th, 19th and 20th meetings
• New York, USA	Made the technical part of oral presentation for Kenya's Continental shelf Claim (September 2009)

Employment record

(a) February 2006 to date:

Employer:

Presidency and Cabinet Affairs office, Taskforce on Delineation of Kenya's Continental Shelf

Designation

Geologist and GIS Specialist

Responsibilities

- A member of the core team in advising the government on actions and strategy to be taken to settle a maritime boundary between Kenya and Somalia
- Ensure Kenya puts up a technically and scientifically provable Continental Shelf beyond 200 nm claim acceptable to the Commission on the Limits of the Continental Shelf as stipulated in UNCLOS through:
- Identification of data sources, collection, treatment and analysis of data and
- Planning and execution of new data acquisition exercises
- Resolve GIS and geological related issues
- Advise the Government of Kenya on relevant undertakings towards realization of the above objectives.

(b) May 2006 to date

Employer

- Ministry of Higher Education Science and Technology
- Directorate of Research Development and Management

Designation

Senior Assistant Director

Responsibilities

- Conduct research in Geoscientific fields
- Setting, running and maintaining an electronic database on information on research organisation in Kenya
- Evaluating general climate change information in relation to its impacts, vulnerability, adaptation and mitigation
- Guiding and supervising junior research officers

(c) March 1997 to February 2006

Employer

Ministry of Environment and Natural Resources, Mines and Geological Department

Designation

Geologist

Responsibilities

- Running departmental projects in the Environmental and Geo-hazard section which included Landslide Zonation project in Central Kenya Highlands and Mercury Pollution by Artisanal Gold Miners Project in the gold mining areas of Western and Nyanza provinces of Kenya
- Reviewing environmental impact assessment, environmental audits and project reports submitted to the Department by National Environment Management Authority (NEMA)
- Field research preparation studies, geological field surveys and geo-hazardous sites investigation
- Rock, soil sampling and other materials sampling and observation in the course of the above as well as sample analysis and interpretation of data
- Mineral identification and verification using various laboratory methods and machines
- Compilation of the respective reports and write-ups as well as other official and general responsibilities

(d) September 2002 to September 2003

Employer

Kenyatta University

Department of Environmental Planning and Management

Designation

Part-time Lecturer

Responsibilities

- Holding and organizing for lectures in the following fields:
- Planning and Management of urban slums and squatter settlements
- Rural area planning (District focus planning)
- Population dynamics and environmental planning
- Evaluating the level of accomplishment of the objective by Setting and marking examination

(e) 1 December 1995 to 30 June 1996

Employer

Groundwater Survey (K) Limited

Designation

Geologist, Assistant hydro-geologist

Supervisor's

Senior hydro-geologist, Consultant-cum-director of the company

Responsibilities

- Desk study in terms of geological and hydro-geological characteristics of proposed sites,
- Field reconnaissance surveys of proposed sites,
- Detailed geological, hydro-geological and geophysical investigations of these sites,
- Analysis of data collected from the field and compilation of reports and
- Assisting in supervision of borehole/water well drilling

Membership in professional societies

- Geological society of Kenya

  Professional member,

- Geologists Registration Board of Kenya

  Registered Geologist,

- National Environmental Management Authority of Kenya

  Registered Lead expert in Environmental Impact Assessment and Environmental Audit

Awards and honours

Accorded, on 12th Dec 2008, the honour and style of The Order of Grand Warrior of Kenya (OGW) by the Head of State for devotion and Commitment to service of the Nation

Compiled reports (unpublished)

- Under the Continental Shelf of Kenya Programme:

  Submission on the Continental shelf of Kenya beyond 200nm to the Commission on the Limits of Continental Shelf of the United Nations

  Delineation of Kenya's Outer Continental Shelf Beyond 200nm; Data acquisition report

  Delineation of Kenya's Outer Continental Shelf Beyond 200nm; the Desktop study

  Delineation of Kenya's Outer Continental Shelf Beyond 200nm; Test of Appurtenance

- Geological feasibility Study for a proposed ballast Quarry in Mlolongo, Mavoko Municipality, Machakos District Kenya, June 2006

- Slope failures in Muranga District Kenya, Jan 2006
- Mines and Geological Department, Ministry of Environment and Natural Resources, Kenya brochure, December 2005
- Progress reports on Landslide Investigation in Kabawa Village Keiyo District Kenya, The environmental implication of mercury use in gold recovery in Western and Nyanza Provinces, Kajiado-Isinya-Taita Taveta gypsum and gemstones mining development and verification
- Environmental project report for Wamba Replacement Borehole in Samburu District, June 2005 (supervising)
- Environmental project report for a Proposed Borehole Drilling in, Maralal Township, Samburu District Kenya, May 2005 (supervising)
- Initial environmental audit report for Jaswinder and Skyline gypsum mines in Isinya Kajiado district Kenya, February 2005
- Environmental audit report for Duse Sapphire Mine in Kinna Isiolo distric Kenya , October 2004
- Environmental Project report For River Bank Protection and River bed Modification in Lavington Nairobi Kenya, July 2004
- Preliminary Landslide reports for Muranga, Sasumua and Ndunyu Chege Kenya, August 2003
- Geology of Southern de Los Filabres (S.E. Spain) with Emphasis on Seamless Map Compilation, September 2001
- Environmental Impact Assessment report, Twente Conurbation province of Overijssel, the Netherlands May 2001
- Bibliography of the reports on geochemistry in Kenya, November 1999

Isaac Owusu Oduro (Ghana)

Employer

Environmental Protection Agency

Accra, Ghana

Personal information

Date of birth: 13 March 1953

Languages: English, Russian and French

Educational background

November 2006

GIMPA, GREENHILL, Accra, Ghana

Obtained Certificate in Strategic Management.

December 2005

Ministry of Foreign Affairs, Accra, Ghana

Obtained certificate of successiul completion of Training course for delineation of the outer limits of the continental shelf beyond 200 nautical miles and for preparation of submission of a coastal state to the CLCS organised by DOALOS of the UN.

May 2004

Southampton Oceanography Centre, Southampton, United Kingdom

Obtained certificate of successful completion of study programme on "Article 76 of the UN Convention on the Law of the Sea (UNCLOS)".

October 2003

CENTEK, Luleå, Sweden

Obtained certificate of participation in course/workshop "Mining and the Environment".

October 1992

German Geological Survey, Dodoma, Tanzania

German Geological Survey, Hannover, Germany

Obtained certificate of participation in workshop "Methods of Regional Geological Mapping in Africa".

June 1981

Lumumba University, Moscow, Russia

Obtained MSc. Degree (Diplomme) in Applied Geology

Obtained certificate as interpreter (Russian-English)

June 1974

Ghana Secondary School, Koforidua, Ghana

Obtained the Advanced Level Certificate (GCE 'A' Level) in Mathematics, Economics, Geography and General Paper.

June 1972

Ghana Secondary School, Koforidua, Ghana

Obtained the West African School Certificate (GCE 'O' Level) with credit passes in English Literature, English Language, Mathematics, Additional Mathematics, General Science, Additional General Science and Geography.

June 1967

Catholic Primary School, Oyoko-Koforidua, Ghana

Local Authority Middle School, Oyoko-Koforidua, Ghana

Obtained the Middle School Leaving Certificate (MSLC).

Work experience

June 2000 till date

Environmental Protection Agency, Accra, Ghana

Chief Programme Officer (Director), Programme Planning, Monitoring and Evaluation (PPME) of the Environmental Protection Agency of Ghana

Responsible for planning and monitoring of Programmes of the Environmental Protection Agency.

Sept. 1997-May 2000

Teberebie Goldfields Company Ltd

Senior Exploration Geologist

Responsible for the evaluation of resource potential of gold concession (Geological mapping, Soil sampling, Trenching, Interpretation of data, Report preparation etc), Administration of camp of fifty skilled and unskilled labour.

July 1996-June 1997

Ashanti Exploration Company Ltd

Exploration Geologist

Responsible for the evaluation of resource potential of gold concession (Geological mapping, Soil sampling, Trenching, Interpretation of data, Report preparation etc).

Sept. 1981-June 1996

Ghana Geological Survey

Regional Geologist

Rose from Assistant Geologist to Regional Geologist in charge of Northern, Upper East and Upper West Regions of Ghana.

Was responsible for Regional Geological Mapping of the three Northern Regions, offered valuable geological information to the public and the government through reports and bulletins.

Sept. 1974-June 1975

Ghana Secondary School, Koforidua

Mathematics Tutor

Taught Mathematics to form two students of Ghana Secondary School.

Language proficiency

Read, write and speak fluent English Language.

Speak read and write fairly well Russian Language.

Have working knowledge in French.

Accomplishments

Member of the CLCS from June, 2007 to June, 2012

The period 24th-26th March 2009, participated in and presented a paper on "The purpose and functions of the CLCS" at a seminar on the work of the International Seabed Authority (ISA) in Abuja, Nigeria on the theme: "Exploration and Exploitation of deep seabed mineral resources in the Area; challenges for Africa and opportunities for collaborative research in the South Atlantic Ocean".

The period 9th-10th November 2009, participated in and chaired two technical sessions of the "Pan-African Conference on Maritime Boundaries and the Continental Shelf for the implementation of the African Union Border Programme (AUBP) in Accra, Ghana".

The period 27th-28th May 2010, participated in and presented a paper on "Establishment of Rights over Continental Shelf — Theory and Practice of the Continental Shelf Regime" in an International Symposium on Scientific and Legal Aspects of the Regimes of the Continental Shelf and the Area held in Beijing, capital of the Peoples' Republic of China".

In September 1995 to June 1996, taught General Geology to first year Agriculture students of the University for Development Studies at Tamale, the Northern Regional capital of Ghana.

Hold a certificate as a Local Preacher of the Methodist church of Ghana.

Computer skills

Have skills in Word, Excel, Power Point and use of the Internet.

Membership of organizations

Member, Ghana Institution of Geoscientists (GhIG).

List of publications

Industrial Mineral Resources of Ghana and their contribution to the Economic Recovery Programme (at the Annual Conference of Ghana Institution of Geoscientists, 1982).

Management of Land use conflicts in Mining areas of Ghana (an Article in the Environmental Protection Agency (EPA) of Ghana Newsletter in 2003).

An overview of the offshore drilling operations in the Western Tano contract area by Dana Petroleum (GH) Ltd. and Ghana National Petroleum Corporation (an Article in the EPA Newsletter in 2003).

Yong Ahn Park (Republic of Korea)

Member and Vice-Chairman, Commission on the Limits of the Continental Shelf

Acting Chairman, 28th and 29th Session, CLCS

Professor Emeritus, Seoul National University

Date of Birth: 1 January 1937

Languages: Korean, English, German

Educational background

1973 Ph.D. Marine Geology, Kiel University, Federal Republic of Germany

1966 M.S. Dept. of Geology, Brown University, U.S.A.

1964 M.S. Dept. of Geology, Seoul National University, Korea

Current position

2010	Senior researcher, Research Institute of Oceanography, Seoul National University
2002	Professor Emeritus, Seoul National University
2002	Technical advisor, Qingdao Institute of Marine Geology, Qingdao, China
1997	Member and Vice-Chairman, Commission on the Limits of Continental Shelf/UN Convention on the Law of the Sea
1996	Chairman, IGCP/UNESCO for Korean National Committee

Professional experience

2001-2003	President, International Society of Yellow Sea Research
2001-2003	Member, Prime Minister's Office, Water Resource Policy Committee
1998-2002	Member, National Advisory Committee for the Ocean Drilling Project (ODP)
1997-2002	Chairman, the Korea-China Joint Committee for Basic Scientific Research
1996-1997	Korean delegate to the IGCP-396 (Late Quaternary records of continental shelves of the world), Sydney, and Australia
1987-1993	President, Korean Quaternary Association (KOQUA)
1983-1985	President, Korean Society of Oceanography
1982-1984	Vice Dean, College of Natural Sciences, Seoul National University
1979-1982	Advisor for the law of the sea, Ministry of Foreign Affairs of the Republic of Korea

1978-1982	Member, Special Committee for planning the continental shelf exploitation, Ministry of Energy and Resources, Korea
1978-1979	Visiting Professor, Duke University, U.S.A.
1975-1985	Member of the Korean delegation, Intergovernmental Oceanographic Commission
1967-2002	Professor, Department of Oceanography, Seoul National University

Activities in the Commission on the Limits of the Continental Shelf (CLCS)

Officer of the Commission

1999-2012	Vice-Chairperson, CLCS
2011-2012	Acting Chairperson, CLCS (28th to 29th Session)

Subsidiary Bodies

1997	Contributor to the development of the Rules of Procedure
1998	Member, working group of the Editorial Committee on the Scientific & Technical Guidelines
1999	Member, Working Group on Training
2002	Member, Subcommission to consider the submission by Russia
2004-2007	Member, Subcommission to consider the submission by Brazil
2007-2009	Member, Vice-Chairperson, Subcommission to consider the submission by Norway
2007-2009	Member, Vice-Chairperson, Subcommission to consider the submission by France
2009-2010	Member, Vice-Chairperson, Subcommission to consider the submission by Indonesia
2010-2011	Member, Vice-Chairperson, Subcommission to consider the submission by Suriname
2011-present	Member, Vice-Chairperson, Subcommission to consider the submission by Philippines
2011-present	Member, Subcommission to consider the submission by the Cook Islands

Associations

Society for Sedimentary Geology, U.S.A.

Korean Society of Oceanography

Geological Society of Korea

Korean Quaternary Association

American Geophysics Union, U.S.A.

International Association of Sedimentologists

Decorations and awards

1987	Distinguished Scientific Paper Award, Korean Society of Oceanography, Republic of Korea
1989	Commendation for Geological Oceanography from the President of the Republic of Korea
2001	Order of Service Merit (Red stripes) from the President of the Republic of Korea
2001	2000 Outstanding Intellectuals of the 21st Century, International Biographical Centre, England
2006	Natural Sciences Award from the National Academy of Sciences, Republic of Korea
2008	Award from the International Asian Marine Geology Organization
2009	Kublai Khan Gold Medal from Mongolian Academy of Sciences, Mongolia

Major publications

Prof. Park has published over 120 international and national research papers and books on marine geology and the continental shelves. Notable and relevant ones include:

International Academic Research Papers

Park, Y. A., (1992). Migration and textural parameters of intertidal channel sand bars in the tidal environments near Sylt, Schleswig-Holstein (F.R. Germany), Meyniana, Vol. 24.

Park, Y. A. and Pikley, O. H., (1981). Detrital mica: Environmental significance of roundness and grain surface textures, Journal of Sedimentary Petrology, Vol. 51, No.1.

Klein, G. deV., Park, Y. A., Chang, J. H. and Kim, C. S., (1982). Sedimentology of a subtidal, tide-dominated sand body in the Yellow Sea, Southwest Korea Marine Geology, Vol. 50.

Park, Y. A., J. T. Wells and Huh, O. K., (1983). Dispersal of silts and clays by winter monsoon surges in the southeastern Huanghai Sea, in Proceedings of the International Symposium on Sedimentation on the Continental Shelf, Hangzhou, China, China Ocean Press.

Bloom, A. L., and Park, Y. A., (1985). Holocene sea-level fistory and tectonic movement, Republic of Korea, Quaternary Research (Japan), Vol. 24.

Park, Y. A., Wells, J. T. and Choi, J. H., (1985). Storm-induced fine sediment transport, west coast of South Korea, Geo-Marine Letters, Vol. 4.

Park, Y. A., and Choi, J. Y., (1989). Mechanism and distribution patterns of the fine-grained suspended materials off the southeast coast of Korea, Acta Oceanographica Taiwanica, Vol.24.

Park, Y. A., and Khim, B. K., (1990). Clay minerals of the recent fine-grained sediments on the Korean Continental shelves, Continental Shelf Research, Vol. 10, No. 12.

Wells, J. T., Adams, C. E., Park, Y. A. and Frankenburg, E.W., (1990). Morphology, sedimentology, and tidal-channel processes on a high-tidal-range mudflat, west coast of Korea, Marine Geology, Vol. 95.

Adams, C. E., Wells, J. T. and Park, Y. A., (1990). Internal hydraulics of a sediment-stratified channel flow, Marine Geology, Vol. 95.

Park, Y. A. and Khim, B. K., (1992). Smectite as a possible source-indicative clay mineral in the Yellow Sea, Geo-Marine Letters, Vol. 12.

Khim, B. K. and Park, Y. A., (1992). Origin and dispersal of recent clay minerals in the Yellow Sea, Marine Geology, Vol. 104, No. 1-4.

Park, Y. A. and Wells, J. T., (1992). Observation on shelf and subtidal channel flow: Implications of sediment dispersal seaward of the Keum River Estuary, Korea Estuarine, Coastal and Shelf Science, Vol. 34.

Park, Y. A., Chang, J. H., Lee, C. H. and Han, S. J., (1996). Controls of storm and typhoon on Chenier formation in Komso Bay, Western Korea, Journal of Coastal Research, Vol. 12, No. 4.

Park, Y. A., Lim, D. I., Khim, B. K., Choi, J. Y. and S. J. Doh, (1998). Stratigraphy and subaearial exposure of late quaternary tidal deposits in Haenam Bay, Korea (Southwestern Yellow Sea), Estuarine Coastal and Shelf Science, Vol. 47.

Lee, H. J., Chu, Y. S. and Park, Y. A., (1999). Sedimentary processes of fine-grained material and the effect of seawall construction in the Daeho macrotidal flat-nearshore area, northern west coast of Korea, Marine Geology, Vol. 157.

Park, Y. A. and Choi, K .S., (2002) Late Quaternary stratigraphy of the muddy tidal deposits, west coast of Korea, in Terry Healy and Ying Wang (eds.) Muddy Coasts of the World Processes, Deposits and Function, Elsevier.

Lim, Dhong-Il, Park, Y. A., Choi, Jin-Young, Cho, J. W. and Khim, B. K., (2000). Glauconite grains of the continental sediments around Korean peninsula and their depositionali, Geo-Marine Letters, Vol. 20, No. 2.

Choi, Kyung Sik and Park, Y. A., (2000). Late Pleistocene silty tidal rhythmites in the macrotidal flat between Youngjong and Yongyou Islands, west coast of Korea, Marine Geology, Vol. 167.

Park, Y. A., Choi, Jin-Yong and Gao, S., (2001). Spatial variation of suspended particulate matter in the Yellow Sea, Geo-Marine Letters, Vol. 20, No. 4.

Choi, Kyung Sik, Kim, Baeck Oon and Park, Y. A., (2001). Late Pleistocene Tidal Rhythmites in Kyunggi Bay, West Coast of Korea: A Comparison with Simulated Rhythmites Nased on Modern Tides and Implications for Intertidal Postioning, Journal of Sedimentary Research, Vol. 71, No. 5.

Lim, D. I. and Park, Y. A., (2002). Late Quaternary stratigraphy and evolution of a Korean tidal flat, Haenam Bay, Southeastern Yellow Sea, Korea, Marine Geology, Vol. 193.

Books

Park, Y. A. et al., 1976. Introduction to Earth Science, 3rd ed., KyohakSa.

Park, Y. A., 1978. Ocean (The Endless Purpose), 2nd ed., Korea Research Foundation,

Park, Y. A., et al., 1983. Earth Science, Vol. 1 and 2, Ministry of Education.

Park, Y. A., et al., 1988. Geology of Korea, 2nd ed., Kyohaksa.

Park, Y. A., et al., 1992. Principles of Geology, 2nd ed., Woosung Cultural Press.

Park, Y. A., et al., 1992. Earth Science, Vol. 1 and 2, Dong-A Press.

Park, Y. A., et al., 1996. Principles of Oceanography, (Richard Davis) trans., Korea Textbook Press Inc.

Park, Y. A., et al., 2001. Quaternary Environment of Korea, Seoul National University Press.

Park, Y. A., et al., 2001. Tidal Environment of Korea, Seoul National University Press.

Park, Y. A., et al., 2010. Eodo Island- the last point of Korea, Saet Byoel D&P.

Park, Y. A., 2011. Principles of Oceanography, 2nd ed., Seoul National University Press.

Summary: The activities of Prof. Yong Ahn Park as member of the Commission on the Limits of the Continental Shelf, United Nations (CLCS /UN), from the first session to the twenty ninth session (1997-2012), have been impartial, conscientious and honest for the various works of the CLCS — the Editorial Committee; the Training Committee; and the subcommissions to consider the submissions made by (1) the Russian Federation, (2) Brazil, (3) Norway, (4) France, (5) Indonesia, (6) Suriname, (7) the Philippines, and (9) the Cook Islands as member and as vice-chairperson. And also as Acting Chairman for the twenty eighth session of the CLCS in 2011 and the twenty ninth session in 2012, Prof. Park has impartially, conscientiously and honestly performed his work and duties.

Prof. Yong Ahn Park is a distinguished and well-known scholar in Korea who started the teaching of marine geology for the first time in Korea, and established the Department of Oceanography at the Seoul National University in 1968, which was the first department of oceanography among the universities in Korea 45 years ago. (Now there are 12 universities in Korea that have department of oceanography.) Most of the leading young marine geologists, ocean-going oceanographers and professors of marine geology and oceanography in Korea are excellent students of Prof. Park. As described above, he has carried out a number of researches of great significance and high impact in the field of marine geology, and published over 120 papers through international and national academic journals and 12 books, as of 2011. Prof. Yong Ahn Park contributed his constant effort for the development of academic societies of geological sciences, oceanography and quaternary sciences as shown above. Prof. Park with two other eminent professors (Prof. P. Wang from China and Prof. A Taira from Japan) established the International Conference of Asian Marine Geology (ICAMG) in 1988, which has been held every three or four years in China, Korea, Japan, Thailand and India, and of which the 8th Conference will be held in Korea in 2014. It is well known in Korean academic societies that Prof. Yong Ahn Park is the founder of the science of oceanography and marine geology, and in fact, the father of marine geology in Korea.

Carlos Marcelo Paterlini (Argentina)

[Original: Spanish]

Personal information

Date and place of birth: 28 September 1947, Mercedes, Province of Corrientes, Argentina

Academic background

Postgraduate qualifications:

Geodetic and Geophysical Engineer

Graduate School of Geodetic and Geophysical Engineering and Hydrographic Engineering, School of Engineering, University of Buenos Aires (1974–1981).

Hydrographic Engineer

Graduate School of Geodetic and Geophysical Engineering and Hydrographic Engineering, School of Engineering, University of Buenos Aires (1974–1981).

University degree:

Surveyor

School of Engineering, University of Buenos Aires (1967–1973).

Specialization

Mr. Paterlini has specialized in marine geophysics. He has also gained extensive experience in aeromagnetic surveys.

Professional activity

1975 to date:

Scientific Researcher in the Research and Development Track for the Armed Forces, Ministry of Defence, based in the Marine Geology and Geophysics Division of the Oceanography Department of the Argentine Hydrographic Service (SHN). He is currently Principal Researcher/Project Director and Head of the Marine Geophysics Section of the Oceanography Department of SHN.

In the last 34 years, the marine geophysics research and development tasks carried out by Mr. Paterlini have been mainly focused on contributing to the geological and geophysical knowledge of the Argentine Continental Shelf within the framework project entitled "Geological and Geophysical Reconnaissance of the Argentine Continental Shelf".

He has participated in more than 15 oceanographic surveys, as Chief Scientist in some, and in joint projects with both national and foreign institutions such as the Instituto Antártico Argentino (IAA), the Lamont-Doherty Earth Observatory, the United States Naval Research Laboratory and the Federal Institute for Geosciences and Natural Resources of the German Geological Survey (BGR). He has published more than 30 scientific papers, both alone and with other authors. He has also written more than 20 technical reports.

2003 to date:

Technical Coordinator of the Technical Subcommission of the National Commission on the Outer Limit of the Continental Shelf (COPLA, Argentina), responsible for managing, monitoring and coordinating the various technical tasks involved.

1976-2002:

Extensive work on projects aimed at solving practical problems posed by the construction of large engineering works of national scope both on the seacoast and on major rivers, and has served as an evaluator of mining resources. Projects in which he has participated or which he has managed include:

1998-2002:	Monitoring of aerogeophysical surveys, Santa Cruz de la Sierra, Bolivia.
1995:	Geophysical studies for the Paraná-Paraguay River Waterway Project. Geological and geophysical studies, Buenos Aires-Colonia (Uruguay) Bridge Project over the Río de la Plata.
1992:	Studies for the siting of the fishing port of Caleta Paula, Santa Cruz.
1991-1992:	Seismic interpretation for oil prospecting in the El Santiagueño and Meseta Espinosa areas of the Neuquina and San Jorge basins, respectively (CADIPSA).
1986:	Upgrading of the port of Montevideo, Uruguay.
1983:	Site study for the operation of an offshore oil rig, Tierra del Fuego (Total Austral).
1982:	Site seismicity, Atucha II nuclear power plant, Buenos Aires.
1980:	Channel dredging, Bahía Blanca estuary, Buenos Aires.
1977:	Siting of a deep-water seaport, Punta Médanos, Buenos Aires.
1976:	Mining prospecting, Sierra Grande, Río Negro.

Academic activity

1976 to date:	School of Engineering, Universidad Católica Argentina. Associate Professor of Topography and Geodetics. Full Professor with tenure since 2008.
1996 to date:	School of Sea Sciences, Naval University Institute, Argentine Navy. Full Professor. Courses in: Instrument Physics, Topography I and II, Geodetics and Elements of Geophysical Exploration, for the B.Sc. in Cartography.
1991-1994:	Technological Institute of Buenos Aires. Associate Professor of Marine Geophysics, Department of Oceanography.
1980-1981:	Technological Institute of Buenos Aires. Professor of Magnetism, Department of Hydrography.
1974-1978.	Buenos Aires School of Cartography. Substitute Full Professor. Subjects: Photogrammetry and Physics.

Specialized courses

1987 to date: One-year training course in oceanography for commanding officers of the Argentine Navy. Subject: Marine Geophysics.

Supervision of B.Sc. theses

1997: Technological Institute of Buenos Aires, Department of Oceanography. Title: "Estudio geológico-geofísico aplicado al mejoramiento de un puerto pesquero" ("Geological and geophysical study of the upgrading of a fishing port").

1996: Technological Institute of Buenos Aires, Department of Oceanography. Title: "Esudios de sitios para la instalación de plataformas off-shore" ("Study of sites for the installation of offshore rigs").

1994: Technological Institute of Buenos Aires, Department of Oceanography. Title: "Análisis y modelado de una anomalía magnética conspicua en el Golfo San Matías" ("Analysis and modelling of a conspicuous magnetic anomaly in the San Matías Gulf").

Publications

Significant publications from the past three years:

Scientific journals

1. Parker, G., Violante, R.A., Paterlini, C.M., Marcolini, S., Costa, I.P., and Cavallotto, J.L., Las secuencias sismoestratigráficas del Plioceno-Cuaternario en la Plataforma Submarina adyacente al litoral del este bonaerense (Pliocene-Quaternary seismostratigraphic sequences on the submarine shelf adjacent to the shore of eastern Buenos Aires Province), in *Latin American Journal of Sedimentology and Basin Analysis*, vol. 15, No. 2 (Asociación Argentina de Sedimentología, La Plata, Argentina, 2008), pp. 105-124. ISSN 1669-7316.

2. Hernández-Molina, F.J., Paterlini, C.M., Violante, R.A., Marshall, P., de Isasi, M., Somoza, L., and Rebesco, M., Contourite depositional system in the Argentine Margin: an exceptional record of the influence and global implications of Antarctic water masses, in *Geology*, Vol. 37, No. 6 (Geological Society of America, 2009), pp. 507-510. ISSN 0091-7613.

3. Violante, R.A. Paterlini, C.M., Costa, I.P., Hernández-Molina, F.J., Segovia, L.M., Cavallotto, J.L., Marcolini, S., Bozzano, G., Laprida, C., García Chapori, N., Bickert, T. and Spiess, V., El Talud Continental adyacente al litoral del este bonaerense: morfología, registro geológico y evolución (The continental slope adjacent to the littoral of eastern Buenos Aires Province: morphology, geological record and evolution), in *Latin American Journal of Sedimentology and Basin Analysis*, Vol. 17, No. 1 (Asociación Argentina de Sedimentología, La Plata, Argentina, 2010), MS 188.

4. Hernández-Molina, F.J., Paterlini, M., Somoza, L., Violante, R.A., Arecco, M.A., de Isasi, M., Rebesco, M., Uenzelmann-Neben, G., Neben, S., and Marshall, P., Giant mounded drifts in the Argentine Basin: origins, global implications in the thermohaline circulation, and gas hydrate potential, in *Marine and Petroleum Geology*, Vol. 27 (2010), pp. 1508-1530.

Books and book chapters

Violante, R.A., Marcolini, S., Cavallotto, J.L., Paterlini, C.M., Costa, I.P., Laprida, C., Dragani, W., Watanabe, S., Totah, V., Rovere, E.I., and Osterrieth, M.L., The Argentine Continental She[illegible]norphology, sediments, processes and evolution since the last glacial maxi[illegible]ubmission for *Continental Shelves During the Last Glacioeustatic Cycle[illegible] of the World Reviews*, the final volume of Project IUGG-UNESCO-IGCP [illegible], *Continental Shelves During the Last Glacial Cycle*, A.R. Chivas and P.L. Chiocci, eds. (Geological Society of London, United Kingdom). Submitted manuscript No. CSDLGC-485.

Congresses, symposiums and other scientific meetings

1. Violante, R.A., Paterlini, C.M., Costa, I.P., Cavallotto, J.L., Segovia, L.M., Marcolini, S., Laprida, C., García Chapori, N., Hernández-Molina, F.J., Watanabe, S., Totah, V., and Bozzano, G., Aspectos geológicos, geofísicos y evolutivos del sector bonaerense del Margen Continental Argentina (Geological, geophysical and evolutionary aspects of the Buenos Aires Province sector of the Argentine Continental Margin), paper presented at the Sixth Jornadas Geológicas y Geofísicas Bonaerenses, Mar del Plata, Argentina, 2007. Abstract 111.

2. Violante, R.A., Paterlini, C.M., Costa, I.P., Segovia, L.M., and Cavallotto, J.L., Las secuencias sedimentarias del Cenozoico en el margen continental bonaerense (The Cenozoic sedimentary sequences in the continental margin of Buenos Aires Province), paper presented at the Sixth Jornadas Geológicas y Geofísicas Bonaerenses, Mar del Plata, 2007. Abstract 102.

3. Costa, I.P., Segovia, L., Paterlini, C.M., and Violante, R.A. Evolución de las terrazas del talud continental superior en el área que comprende al cañón submarino Mar del Plata (Evolution of terraces on the upper continental slope in the area comprising the Mar del Plata submarine canyon), paper presented at the Sixth Jornadas Geológicas y Geofísicas Bonaerenses, Mar del Plata, 2007. Abstract 104.

4. Costa, I.P., Segovia, L., Paterlini, C.M., and Violante, R.A, Retrogradación del borde exterior de la Plataforma submarina durante el Pleistoceno frente a Mar del Plata (Pleistocene retrogradation of the submarine shelf outer edge opposite Mar del Plata), paper presented at the Sixth Jornadas Geológicas y Geofísicas Bonaerenses, Mar del Plata, 2007. Abstract: 107.

5. Violante, R.A., Costa, I.P., Marcolini, S., Paterlini, C.M., Segovia, L., Cavallotto, J.L., Laprida, C., García Chapori, N., Bozzano, G., Hernández-Molina, F.J., Bickert, T., and Spiess, V., Descripción morfosedimentaria de los ambientes de plataforma exterior-talud del este bonaerense (Morphosedimentary description of the outer shelf-slope settings in the eastern sector of the Buenos Aires Province), paper presented at the Twelfth Reunión Argentina de Sedimentología, Buenos Aires, Argentina, June 2008. Abstract 186, A. Tripaldi and G. Veiga, eds.

6. Violante, R.A., Paterlini, C.M., Hernández-Molina, F.J., Marshall, P., de Isasi, M., Somoza, L., Costa, I.P., Segovia, L., Spiess, V., and Bickert, T., Los rasgos erosivos y depositacionales del sector norte del talud continental argentino (Erosional and depositional features of the northern sector of the Argentine

continental slope), paper presented at the Twelfth Reunión Argentina de Sedimentología, Buenos Aires, Argentina, June 2008. Abstract 187, A. Tripaldi and G. Veiga, eds.

7. Hernández-Molina, F.J., Paterlini, M., Marshall, P., de Isasi, M., Somoza, L., and Violante, R.A., The Argentine Continental Slope Contourite Depositional System, paper presented at the Twelfth Reunión Argentina de Sedimentología, Buenos Aires, Argentina, June 2008. Abstract 83, A. Tripaldi and G. Veiga, eds.

8. Hernández-Molina, F.J., Paterlini, M., Marshall, P., de Isasi, M., Somoza, L., and Violante, R.A., The evolution of the contourite depositional system in the Argentine margin: influence and global implications of Antarctic water masses, paper presented at the Twelfth Reunión Argentina de Sedimentología, Buenos Aires, Argentina, June 2008. Abstract 84, A. Tripaldi and G. Veiga, eds.

9. Costa, I.P., Segovia. L., Violante, R.A., Paterlini, C.M., and Cavallotto, J.L., Megaestructuras sedimentarias en el talud continental argentino (Sedimentary megastructures on the Argentine continental slope), paper presented at the Seventeenth Congreso Geológico Argentino, Sociedad S. de Jujuy, vol. III: 1198-1199, 2008.

10. Violante, R.A., Cavallotto, J.L., Paterlini, C.M., Marcolini, S., and Costa, I.P., Morphology and sedimentology of the continental shelf adjacent to eastern Buenos Aires Province, Argentina, paper presented at the Second Annual Conference, International Geological Correlation Programme Project 526 ("Risks, Resources, and Record of the Past on the Continental Shelf: Mining Late Quaternary Geological Evidence"), Natal, Brazil, 2008. Abstract volume: 7-8.

11. Costa, I.P., Paterlini, C.M., and Violante, R.A., Depósitos de corrientes de contorno y turbidez en el cañón submarino Mar del Plata (Contour current deposits and turbidity in the Mar del Plata submarine canyon), paper presented at the Fourteenth Reunión Científica de la Asociación Argentina de Geofísicos y Geodestas, Mendoza, Argentina, 2009. Abstracts 281–282.

12. Costa, I.P., Paterlini, C.M., and Violante, R.A. Cañón Mar del Plata: arquitectura de un sistema turbidítico activo (Mar del Plata canyon: architecture of an active turbiditic system), paper presented at the Seventh Jornadas Nacionales de Ciencias del Mar and Fifteenth Coloquio de Oceanografía, International Association for the Physical Sciences of the Oceans, Bahía Blanca, Argentina, December 2009.

13. Violante, R.A., Hernández-Molina, F.J., Paterlini, C.M., Bozzano, G., Krastel, S., Hanebuth, T., Preu, B., and Laprida, C., Contouritic terraces on the northern Argentina middle continental slope (Southwestern Atlantic), paper presented at the international congress "Deep-Water Circulation: Processes and Products", Baiona, Pontevedra, Spain. In *Geotemas*, vol. 11, 2010, pp. 183-184.

14. Bozzano, G., Violante, R.A., Paterlini, C.M., Hernández-Molina, F.J, Hanebuth, T., Huppertz, T., Orgeira, M.J. and Krastel, S., Contourite drifts over the Ewing Terrace (Northeastern Argentina, Southwestern Atlantic), paper presented at the international congress "Deep-Water Circulation: Processes and Products", Baiona, Pontevedra, Spain. In *Geotemas*, vol. 11, 2010, pp. 41-42.

15. Hernández-Molina, F.J., Somoza, L., Paterlini, C.M., Violante, R.A., Rebesco, M, Uenzelmann-Neben, G., Arecco, M.A., and de Isasi, M., The role of giant drifts as gas hydrate reservoirs on the Argentine contourite depositional system, paper presented at the international congress "Deep-Water Circulation: Processes and Products", Baiona, Pontevedra, Spain. In *Geotemas*, vol. 11, 2010, pp. 96-97.

16. Violante, R.A., Paterlini, C.M., Bozzano, G., Hanebuth, T., Strasser, M. and Krastel, S., "Morphosedimentary characteristics and evolution of the Mar del Plata Submarine Canyon, Northern Argentina Continental Margin", paper submitted to the Eighteenth International Sedimentological Congress, Mendoza, Argentina. Submitted with abstract ID no. 208.

17. Hernández-Molina, F.J., Paterlini, C.M., Violante, R.A., Somoza, L., Rebesco, M., and Uenzelmann-Neben, G., Partially buried giant mounded drifts in the Argentine continental margin: origins, and global implications for the history of thermohaline circulation, paper submitted to the Eighteenth International Sedimentological Congress, Mendoza, Argentina. Submitted with abstract ID no. 643.

18. Violante, R.A., Hernández Molina, F.J., Paterlini, C.M., Bozzano, G., and Marcolini, S., Conditioning factors and resulting morphosedimentary features in the upper-middle continental slope offshore eastern Buenos Aires province, Argentina, paper submitted to GeoSur 2010, International Geological Congress on the Southern Hemisphere, Mar del Plata, Argentina.

19. Violante, R.A., Preu, B., Hernández Molina, F.J., and Paterlini, C.M., Los rasgos morfosedimentarios del talud medio del este bonaerense: implicancias genéticas en la evolución del Margen Continental Argentino (Morphosedimentary features in the middle slope of eastern Buenos Aires province: genetic implications in the evolution of the Argentine Continental Margin), paper submitted to the Eighteenth Congreso Geológico Argentino, Neuquén, Argentina, May 2011.

20. Costa, I.P., Violante, R.A. and Paterlini, C.M., Movilidad de los bancos del Río de la Plata en función de la dinámica estuárica y fluvial (Mobility of the Río de la Plata banks based on the estuary and river dynamics), paper submitted to the Eighteenth Congreso Geológico Argentino, Neuquén, Argentina, May 2011.

Recognition by the National Academy of Engineering

1985: Received the Eduardo E. Baglietto Award from the National Academy of Engineering for co-authoring the best paper on a geophysical subject, "Relevamiento aeromagnético regional en el Mar de Weddell noroccidental-antártida") ("Regional aeromagnetic survey in the northwestern Weddell Sea — Argentine Antarctica").

Membership in scientific societies

Asociación Argentina de Geofisicos y Geodestas (Argentine Association of Geophysicists and Geodesists)

International Association for the Physical Sciences of the Oceans (IAPSO)

International Association of Geomagnetism and Aeronomy (IAGA)

Sivaramakrishnan Rajan (India)

Scientist & Project Director, National Centre for Antarctic and Ocean Research, Headland Sada

Vasco-da-Gama, Goa, India

Personal

Born May 25, 1955, Trivandrum, India

Education

Ph. D (Geology & Geophysics) 1995
University of Hawaii, Honolulu, Hawaii, USA

M. Sc. (Geology) 1977
University of Kerala, Trivandrum, India

B. Sc. (Geology) 1975
University of Kerala, Trivandrum, India

Member, Commission on the Limits of the Continental Shelf

2007 present

- Chairman of the Sub-commission to examine the submission for an extended continental shelf made by Barbados
- Chairman of the Sub-commission to examine the submission for an extended continental shelf made by Suriname
- Vice-Chairman of the Sub-commission to examine the submission for an extended continental shelf made by Uruguay
- Member of the Sub-Commission to examine the submission for an extended shelf made by New Zealand, Australia and the partial submission by Mexico.
- Vice-Chairman of the Standing Committee of the Commission on provision of Scientific and Technical Advice to Coastal States.
- Vice-Chairman of the Editorial Committee of the CLCS to consider the amendments to the Rules of procedure.

Professional experience related continental shelf studies

1999-present

PROJECT DIRECTOR, Indian Continental Shelf project: A lead role in all the facets of management and implementation of the project comprising (a) a comprehensive desktop study of the various scientific and technical issues involved in obtaining the requisite data for defining the outer limits of the Indian continental shelf, (b) planning the various aspects of the requisite data collection, processing, synthesis and interpretation, (c) initiation, co-ordination and execution of a major multi-institutional national endeavor of marine geological/geophysical surveys in the Project area, including budgeting and scheduling (d) data synthesis and documentation as per the guidelines of the CLCS, and (e) establishment of a fully-functional state-of-the-art marine geophysical data archival and processing Centre at

the National Centre for Antarctic and Ocean Research, Goa. The database won 2009-10 Computer Society of India-Nihilent e-Governance Special Jury Award under *Project — G2G Category*.

2008

Myanmar continental shelf programme: As a part of the Government of India's initiative at providing scientific and technical guidance to the scientists from the Union of Myanmar-

(a) Carried out a comprehensive desktop study pertaining to the delineation the outer limits of the continental shelf of Myanmar beyond 200 M, based on public domain data; (b) organized a series of meetings with the officials and scientists from Myanmar to finalize the country's continental shelf work programme and to develop the protocol for processing of seismic data collected; (c) co-ordinated the task of bathymetric data interpretation and documentation; and (d) took a lead role in finalizing the technical documents pertaining to the seismic data processing and interpretation.

October 2005

Organized a five-day training workshop on "Delineation of the outer limits of the continental shelf" for scientists and officials from the Union of Myanmar, at Goa.

April 2005

Organized a five-day training workshop on "Delineation of the outer limits of the continental shelf" for scientists from Sri Lanka, at Goa.

September 2001

Delivered a series of lectures on the scientific aspects of Delineation of the Continental Shelf Limits under the provisions of UNCLOS, at the National Seminar organized by the National Hydrographic Office (India) and the Society for Indian Ocean Studies at Delhi.

Papers presented (of relevance to continental shelf studies)

November 2009

Rajan, S., Ashlesha Saxena, and Mukesh Adelkar, *Geospatial management and Law of the Sea: The Indian Experience*, Joint International Workshop of ISPRS WG IV/1, WG VIII/1 and WG IV/3 on Geospatial Data Cyber Infrastructure and Real Time service with special emphasis on Disaster Management: INCOIS, Hyderabad

September 2009

Rajan, S., 2009, Exploring for extended continental shelves beyond 200 nautical miles: National Conference on Earth System Processes and Disaster Management, Goa

February 2007

Rajan, S., 2007, UNCLOS 1982- Exploring for continental shelves beyond 200 nautical miles, Seminar on "India's EEZ and continental shelf- its exploration, exploitation and conservation", organized by the Indian Maritime Foundation, Pune

December 2007

Rajan, S., 2007, UNCLOS III, article 76 and the CLCS- The scientist as a lawyer? International Seminar on Law of the Sea, organized by the Indian Society of International Law, New Delhi

November 2005

Rajan, S., and N. Vijayalaxmi, 2005, Ocean Governance in a post-UNCLOS world-the South Asian perspective: EWC/EWCA South Asia Regional Conference, New Delhi

September 2005

Vijayalaxmi S. N. and S. Rajan, 2005, Extending the Indian Continental Shelf — a preliminary study through CARIS LOTS: Halifax, Canada, CARIS 2005 — 10th International User Group Conference and Educational Session.

March 2004

Praveen Vohat, Dhananjai Pandey, John Kurian, U. K. Singh, Vijayalaxmi, N., S. Rajan and P. C. Pandey., 2004, Role of marine geophysical data in delineating Indian Legal Continental Shelf: International Hydrographic Seminar HYDRO-IND 2004, Mumbai.

January 2004

Vijayalaxmi, S. N., Rajan, S., Dhananjai Pandey and John Kurian., 2004, Determination of Foot of the Continental Slope for Delineating the outer limits of the Continental shelf through CARIS LOTS: Shimoga, VI Convention of Mineralogical Society of India & International Seminar on Earth Resources Management, Kuvempu University.

April 2002

Rajan, S., 2002, The Legal Continental Shelf from a geological perspective: Invited paper presented at the International Seminar on "Sedimentation and Tectonics in Space and Time", Dept. of Civil Engineering, SDM College of Engineering, Dharwar.

February 2002

Rajan, S., Pandey. P. C., and Subba Raju, L. V., 2000, Delineation of the outer limits of the Indian Continental Shelf-Some Scientific and Technical Observations: 26th Annual Convention and Seminar on Exploration Geophysics, Association of Exploration Geophysicists, Goa.

Professional positions held

Scientist and Project Director (Indian Continental Shelf Project)
Since 1998
National Centre for Antarctic and Ocean Research, Headland Sada, Goa, India

Geologist Senior
1997-95
Marine Wing, Geological Survey of India, Cochin, India

Geologist
1990-84
Marine Wing, Geological Survey of India, Cochin, India

Geologist
1984-79
Engineering Geology Division, Geological Survey of India, Rajasthan, India

Professional Training

Degree Fellow in the Program on Environment East-West Center, University of Hawaii
1990-94

Short-term Course on Coastal Engineering
Ocean Engineering Center, Indian institute of Technology, Chennai, India
1989

Photo-interpretation and Remote Sensing for Geotechnical Surveys
Indian Institute of Remote Sensing, Department of Space, Dehradun, India
1983

Field Orientation Course in geological and geophysical Surveys
Geological Survey of India Training Institute
1980-81

Honors, Awards

J. Watumull Merit Scholarship for the Most Outstanding graduate student in the Dept. of Geology and Geophysics, University of Hawaii
1993-94

East-West Center fellowship for doctoral research at the University of Hawaii
1990-94

Government of India National Merit Scholarship for academic excellence
1975-77

Kerala University Award and Merit Scholarship for academic excellence
1972-75

Participation in International Programmes/Training

"*Arctic Program in India*", Indo-European Union Workshop on Research Infrastructures organized by Department of Science & Technology, Government of India, at New Delhi.
January 2010

International Symposium on the "*Scientific and Technical aspects of the establishment of the Outer limits of the Continental shelf*" organized by the Ministry of Foreign Affairs of Japan and the United Nations University, Tokyo.
March 2006

Training course on "The outer limits of the continental shelf beyond 200 nautical miles and for preparation of a submission of a coastal State to the Commission on the Limits of the Continental Shelf", organized by the Division for Ocean Affairs and the Law of the Sea, United Nations Secretariat. Colombo, Sri Lanka.

May 2005

Conference on Legal and Scientific Aspects of Continental Shelf Limits, Reykjavik, Iceland.
June 2003

Professional experience as a Geoscientist

Currently associated with the following major geoscientific activities, in addition to the continental shelf program:

- Geophysical studies aimed at understanding the plate tectonic evolutionary history of the Southwestern continental margin of India and adjoining ocean basins.
- Geological and structural characterization of the Andaman subduction zone
- Study of seafloor hydrothermal systems along mid-ocean ridges with special reference to the study of hydrothermal sulphide deposits on the Central Indian Ridge

Professional experience pertaining to Polar Science

- Participated in the XXIII Indian Scientific Expedition to Antarctica (2003-04) as a member of the Scientific Task Force constituted by the Government for identification of a suitable site for the establishment of a new Indian Antarctic Base. Undertook reconnaissance traverses in the Vestfold Hills, Rauer Islands and the Larsemann Ranges in the Prydz Bay area, East Antarctica and identified a site suitable for the establishment of the Indian Research Base in the Larsemann Hills.
- Nodal officer responsible for the planning, co-ordination and implementation of all scientific and logistics activities related to the Indian Scientific endeavors in the Arctic.
- Principal investigator of a multi-institutional long-term monitoring program of the Kongsfjorden system at Ny-Alesund on the Svalbard archipelago, for climate change studies.

Professional experience pertaining to the Indian endeavors in the Integrated Ocean Drilling Program (IODP)

- Member Secretary of the National Committee for the co-ordination of Indian initiatives in IODP.
- Proponent of a proposal for deep-sea drilling in the Arabian Sea sector of the northern Indian Ocean, under IODP.

Teaching and research experience

Teaching Assistant, Department of Geology & Geophysics, University of Hawaii
1994-95

Lecturer, Department of Geology, University of Kerala, India
1978-79

Edited Volume

Rajan, S., and Pandey, P. C. (Editors), 2005, *Antarctic Geoscience, Ocean — Atmosphere interaction and Paleo-climatology*: A collection of peer-reviewed papers presented at the National Seminar on "Antarctic Geosciences, Ocean-Atmosphere interaction and paleoclimatology" organised by NCAOR and the Geological Society of India, November 2003.

Other Publications

Sruthi, K. V., S. Rajan, P. R. Rajani, P. J. Kurian, 2012. Factors controlling the distribution of major and trace elements of a sediment core from the eastern Arabian Sea and its environmental significance, submitted to *International Journal of Environmental Science & Technology*.

Dwijesh Ray, S Rajan and Rasik Ravindra, 2012. Role of subducting component and sub-arc mantle in arc petrogenesis: Andaman volcanic arc, Current Science (accepted).

Ray, D., Rajan, S., Ravindra, R. and Jana, A. 2011. Microtextural and mineral chemical analyses of andesite-dacite from Barren and Narcondam islands: evidences for magma mixing and petrological implications, *Journal of Earth System Science*, v. 120, p. 1-12.

Rajan, S. 2011. "*Long-term monitoring of the Kongsfjorden System for climate change studies: The Indian initiatives*" paper presented at the Seminar "From Pole to Pole — Indian and Norwegian Exploration and Research in the Arctic and Antarctic" organized by the Royal Norwegian Embassy, New Delhi, in collaboration with NCAOR and Norwegian Polar Institute, Tromsø, New Delhi, 3rd February 2011.

Pandey, D.K., Pandey, A. and Rajan S. 2011. Offshore Extension of Deccan Traps in Kachchh, Central Western India: Implications for Geological Sequestration Studies, *Natural Resources Research*, v. 20, p. 33-43.

Pandey, D. K., Pandey. A. and Rajan, S. 2010. Mode converted (P-SV) waves for imaging thin intercalated basaltic layers and its implications in carbon sequestration, *Natural Resources Research*, v. 19, p. 141-150.

Pandey, D.K., Rajan, S. and Pandey, A. 2010. Seismic imaging of Paleogene sediments of Kachchh Shelf, (western Indian margin) and their correlation with sea-level fluctuations, *Marine and Petroleum Geology*, Vol. 27, No. 6, 1166-1174.

Ray, D., Rajan, S. and Ravindra, R. 2010. Mineralogy of disseminated sulphides from the volcanics of Andaman Island, *Current Science*, v. 99, p.1021-1024.

Rajan, S. 2010. *NCAOR Project for Ministry of Earth Sciences*. Chapter in book, "Enablers of Change: Selected e-Governance initiatives in India", Piyush Gupta, R K Bagga, Sridevi Ayaluri (Eds.), Pages 104-112,

Dwijesh, R., Rajan, S., and Ravindra, R., 2009, *Andaman Inner arc volcanoes: An evaluation of arc geochemistry and role of sediments in arc lavas*, Geochimica et Cosmochimica Acta, Volume 73, Issue 13, Supplement 1, June 2009, Page A1077

Pandey, D. K., Rajan, S., and Ravindra R., 2009, *A long-term drilling program for understanding of tectono-climatic evolution of northern Indian Ocean. White paper: WG6.6 — INVEST Meeting, Bremen.*

Rajan, S and Glenn, C. R., 2008 (in press), Marl-chalk rhythmicity in the Pliocene Black Sea: A record of sedimentation response to climatic changes, accepted chapter in the forthcoming Special Publication of the International Association of Sedimentologists, UK "*Authigenic minerals: sedimentology, geochemistry, origin, distribution and applications*" (Eds. Ian Jarvis, Karl Follmi)

Rajan, S., and Khare N., 2008, Antarctica and the Southern Ocean: Paleoclimatology of the deep freeze, *Indian Journal of Marine Sciences*, 37(4), 386-390.

Pandey, D K, Chaubey, A K and Rajan, S., 2008, Seismic Characteristics of Glaciomarine sediments of East Antarctica. *Indian Journal of Marine Sciences*, v. 37(4), 412-418.

Singh, U.K., Rajan, S., Pandey D. K., 2008, Crustal Structure and Continent Ocean Boundary of Prydz Bay, East Antarctica based on Gravity Modelling" *Indian Journal of Marine Sciences*, v. 37(4), 419-423.

Rajan, S., 2007, UNCLOS-1982- Exploring for continental shelves beyond 200 nautical miles, (in) Proceedings of the Seminar on "*India's EEZ and continental shelf- its exploration, exploitation and conservation*", organized by the Indian Maritime Foundation, Pune, February 2007, pp. 16-26.

M. Thamban., A. Chaturvedi., A. Rajakumar., S. S. Naik., W. D'Souza., A. Singh., S. Rajan and R. Ravindra., 2006, Aerosol perturbations related to volcanic eruptions during the past few centuries as recorded in an ice core from the Central Dronning Maud Land, Antarctica, *Current Science*, 91, p. 1200-1207.

Singh, U. K., Tiwari, R. K., Singh, S. B., and Rajan, S., 2006, Prediction of Electrical Resistivity Structures using Artificial Neural Networks, *Journal of Geological Society of India*, v. 67, p. 234-242.

Rajan, S., Anju Tiwari and Dhananjai Pandey, 2005, The Deccan Volcanic Province: *Thoughts about its genesis*, www.mantleplumes.org/Deccan2.html

Rajan, S., and Khare, N., 2002, Emerging Visions in Indian marine Geosciences- the Southern Oceans, (in) Proceedings of the National Seminar on "*Four Decades of Marine Geosciences in India- A Retrospective*": Kolkata, Geological Survey of India, Spl. Publication No. 74, p. 70-76.

Rajan, S., Mackenzie, F. T., and Glenn, C. R., 1996, A thermodynamic model for water-column precipitation of siderite in Plio-Pleistocene Black Sea, *American Journal of Science*, v. 296, p. 506-548.

Glenn, C. R., Rajan, S., McMurtry, G. M., and Benaman, J., 1995, Geochemistry, mineralogy and stable isotopic results from Ala Wai estuarine sediments: Records of hypereutrophication and abiotic whitings, *Pacific Science*, v. 49, p. 367-399

Conference/Seminar Proceedings and abstracts

Rajan, S., 2011, *Arctic climate observations from KONGSFJORDEN: Implications for global climate change*: Third National Workshop on Climate Change, NCAOR, Goa, 20-22 September 2011.

Rajan, S. 2010. *Antarctic Continental Shelf and the Law of the Seas: A future winter of discontentment?*, Paper presented at the National Conference on Science and

Geopolitics of Arctic & Antarctic (SaGAA 2011), organized by LIGHTS, New Delhi, 14-15 January 2011.

Rajan, S., and Khare, N., 2009, *Late Quaternary climatic history of East Antarctica: A textured mosaic?* AGU 2010 Ocean Sciences Meeting (Paper No. GO51B-05).

Gireesh, R., Pandey, D. K., and Rajan, S., 2009, *Basement structure of the Laccadive Ridge and Basin from multi-channel seismic reflection and gravity data*, AGU Fall Meeting 2009, San Francisco, USA.

Thamban, M., Chaturvedi, A., Rajakumar, A., Naik, S. S., D'Souza, W., Singh, A., Mukherji, S., Rajan, S., and Ravindra, R., 2006, *Volcanic history and change during the past few centuries as recorded in an ice core from the central Dronning Maud Land, East Antarctica*: SCAR Open Science Conference, Hobart, 12-14 July 2006.

Thamban, M., Chaturvedi, A., Rajakumar, A., Naik, S. S., D'Souza, W., Singh, A., Rajan, S., and Ravindra, R., 2006, *Aerosol perturbations related to volcanic eruptions and climate change during the past few centuries as recorded in an ice core from the central Dronning Maud Land, Antarctica*: National Seminar on Antarctic Science: Indian contributions in Global Perspectives, Goa, 25-26 May 2006.

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Walter R. Roest (Netherlands)

[Original: French]

Date of birth:	1 June 1958
Languages:	Dutch (mother tongue), French, English, German, Spanish (basic)

Present position

In charge of geosciences and deep ecosystems, Scientific Directorate (DS), French Research Institute for the Exploration of the Sea (IFREMER)

Scientific Manager for the French National Programme for the Extension of the Continental Shelf (EXTRAPLAC)

Organization: IFREMER

Academic qualifications

M.Sc. in Experimental Physics, 1982, University of Utrecht, Netherlands

M.Sc. in Geophysics, 1983, University of Utrecht, Netherlands

Ph.D. in Marine Geophysics, 1987, Vening Meinesz Laboratorium, University of Utrecht, Netherlands

Career summary

2009-present	In charge of geosciences and deep ecosystems, Scientific Directorate (DS), IFREMER
2003-present	Manager, French National Programme for the Extension of the Continental Shelf (EXTRAPLAC)
2003-2009	Head, Marine Geosciences Department, IFREMER
2001	Interim Director, Continental Geosciences, Geological Survey of Canada (GSC)
2000-2001	Acting Chief Scientist, GSC
1999-2000	Head, Geoscience Knowledge Sector, GSC
1997-1999	Head, Crustal Geophysics Sub-Division, GSC
1995-2004	Adjunct Professor, Ottawa University/Ottawa Carleton Geoscience Centre
1993-1994	Interim head, Geophysical Applications Laboratory, GSC
1990-2002	Research Scientist, GSC, Natural Resources Canada
1987-1990	Post-doctoral fellow, Bedford Institute of Oceanography, Natural Sciences and Engineering Research Council of Canada (NSERC), GSC

Positions held outside IFREMER

- Co-organizer of session, Geological and Mineralogical Association of Canada (GAC-MAC) 2011, Ottawa, Canada, on the United Nations Convention on the Law of the Sea, May 2011
- Co-organizer of session, International Geological Congress (ICG), Oslo, Norway, on the United Nations Convention on the Law of the Sea: World Wide Database, Data Holders, Data Management, August 2008
- Co-organizer of session, American Geophysical Union (AGU) Fall Meeting, San Francisco, United States, on the United Nations Convention on the Law of the Sea, December 2005
- Member of the French National Commission for Marine Geosciences (2003-2008)
- Member, Scientific Committee of the Dynamique et Évolution de la Terre Interne (DyETI) programme of the Institut National des Sciences de l'Univers, French National Centre for Scientific Research (CNRS) (2003-2007)
- Member, Organizing Committee, AGU Chapman Conference on Exploration Geodynamics, Perth, Australia, August 2001
- Member, Board of Directors, Ottawa-Carleton Geoscience Centre (1999-2002)
- Member, Board of Directors, GEOTOP, Université du Québec à Montréal (1998-2002)
- Associate Editor, *Canadian Journal of Earth Sciences* (1996-2002)
- Member, NSERC Grant Selection Committee 08, Solid Earth Sciences (1994/95)
- Member, Lithoprobe Earth Sciences Grants Committee (1993/94 and 1995/96)
- Member, Technical Programme Committee for the Annual Meeting, Society of Exploration Geophysicists, Los Angeles (1994)
- Regular review of manuscripts for international journals, including *Journal of Geophysical Research*, *Marine Geophysical Research*, *Geology*, *Tectonophysics*, *Geophysical Journal International*, *Earth Science Reviews*, and proposals for funding agencies, including NSERC, the National Science Foundation (NSF), the Fonds pour la formation de chercheurs et l'aide à la recherche (FCAR)

Membership of professional association

Member, American Geophysical Union, Society of Exploration Geophysicists

Work experience in collaboration with other countries

Australia, Brazil, Canada, China, Germany, Great Britain, Ireland, New Zealand, Russian Federation, South Africa, Spain and United States of America, among others

Main professional activities related to the United Nations Convention on the Law of the Sea

Since 2005, as Scientific and Technical Manager for EXTRAPLAC, Dr. Roest has been in charge of all the scientific and technical activities necessary for the collection of data and for the development of submissions to CLCS in New York. Since 2006, he has served as a member of the French delegation at plenary sessions of the Commission and at meetings of the various subcommissions set up to consider the French submissions. To date, this collective effort has led to three recommendations, related to the Bay of Biscay, French Guiana and New Caledonia.

Marine survey experience

Dr. Roest has over 18 months of seagoing survey experience on geophysical and geological cruises. He was chief scientist on a number of scientific cruises related to the extension of the continental shelf, in the Atlantic, Pacific and Indian oceans, viz.:

- Kergueplac 1, R/V Marion Dufresne 2, 2004
- Noucaplac 1, R/V L'Atalante (with Australia and New Zealand), 2004
- Del Cano Rise, R/V Marion Dufresne 2 (with South Africa), 2005
- Kergueplac 2, R/V Marion Dufresne 2, 2005
- Indian Ocean, confidential cruise, R/V Le Suroît, 2006
- Europlac, R/V Marion Dufresne 2, Mozambique Channel, 2007
- Discovery Ridge 2010 Crozetplac, R/V Marion Dufresne 2 (with South Africa), 2010
- Wallisplac, R/V L'Atalante (with Tuvalu and the South Pacific Applied Geoscience Commission — SOPAC), 2010
- SPMPlac, R/V Le Suroît, Atlantic Ocean, Saint Pierre and Miquelon, 2011

Attendance at recent conferences on the law of the sea

2003: Conference on the Legal and Scientific Aspects of Continental Shelf Limits, Reykjavik, Twenty-Seventh Annual Conference of the Centre for Oceans Law and Policy at the University of Virginia School of Law and the Law of the Sea Institute of Iceland

2004: Workshop on the Continental Shelf, Institute for the Economic Law of the Sea (INDEMER), Monaco

2005: Co-organizer of the session of the Annual Meeting of AGU on the United Nations Convention on the Law of the Sea, San Francisco, United States of America

2008: Co-organizer of the session of the 33rd International Geological Congress on the United Nations Convention on the Law of the Sea: global databases and data management, Oslo, Norway

2011: Co-organizer of the session of GAC/MAC on the United Nations Convention on the Law of the Sea, Ottawa, Canada

2011: International workshop for the sharing of experience by countries which have deposited submissions with the Commission on the Limits of the Continental Shelf, Buenos Aires, Argentina

Research interests

- Scientific and technical questions related to the delimitation of the outer limit of the continental shelf
- Nature and evolution of continental margins, sedimentary basins and their potential resources
- Interpretation methods for potential fields
- Geodynamics and plate tectonics

Publications, abstracts, conferences and seminaries

Dr. Roest has published or co-published over 50 peer-reviewed articles, some 50 reports and over 200 abstracts in national and international journals and other publications. He has also drafted or assisted with the drafting of a large number of assessments and drawn up many maps, open file reports and papers on various issues relating to continental margins and their potential resources, including in his capacity as the Scientific and Technical Manager of EXTRAPLAC, on the delineation of the outer limits of the continental shelf pursuant to the United Nations Convention on the Law of the Sea. He has participated in more than 70 national and international conferences and seminars.

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Number of citations:	2,034
H-index:	23

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Vially, R., W. R. Roest, B. Loubrieu, E. Courreges, J. Lecomte, M. Patriat, D. Pierre, M. Schaming and J. Schmitz, 2008. New exploration of Kerguelen plateau margins. *Eos, Transactions, American Geophysical Union*, 89(53), Fall Meeting Supplement, T51B-1877.

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margin. 11ème Congrès Français de Sédimentologie, 23-25 October 2007, Caen, France. Abstract in: *Livre des résumés*, 57, 202.

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Loncke, L., L. Droz, V. Gaullier, C. Basile, W. R. Roest and M. Patriat, 2006. Effet de l'héritage structural sur la distribution et l'importance des instabilités gravitaires le long d'une marge, 28-30 March 2006, Paris, France. Abstract in: *Programme et Résumés*, 51.

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Bargain, J., B. Loubrieu, M. Patriat and W. Roest, 2005. Marine geoscience data management within the framework of the French national program for the extension of the legal continental shelf. International Marine Data and Information Systems Conference, 31 May-3 June 2005, Brest, France. Abstract 62.

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Moussat, E., P. Guennoc, W. Roest and Euroseismic project group, 2005. European marine seismic metadata and information centre (Euroseismic): a gateway to information about marine seismic and sonar surveys. International Marine Data and Information Systems Conference, 31 May-3 June 2005, Brest, France. Abstract 59.

Müller, R. D., T. Torsvik, M. Gurnis, W. R. Roest, M. Coffin, L. Lawver and L. Moresi, 2005. GPlates: open source software and data base for plate reconstructions. European Geosciences Union, 24-29 April 2005, Vienna. *Geophysical Research Abstracts*, 7, 06180.

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Gaina, C., P. J. Ball, W. R. Roest and T. H. Torsvik, 2005. Continent ocean boundaries in the North Atlantic: an overview. *Eos, Transactions, American Geophysical Union*, 86(52), Fall Meeting Supplement, Abstract T12C-02

Roest, W. R., R. Herzer, D. H. Barker, Y. Lafoy and the Noucaplac-1 Shipboard Party, 2005. The Noucaplac-1 Survey, South Fiji Basin: an international collaboration combining UNCLOS and science objectives, *Eos, Transactions, American Geophysical Union*, 86(52), Fall Meeting Supplement, Abstract T13D-0502.

Plus 160 abstracts dating to before 2005.

Luis Somoza Losada (Spain)

[Original: Spanish]

Year of birth: 1959

Place of birth: Madrid, Spain.

Languages: Spanish — mother tongue; English — proficient; Portuguese; French — reading ability

Present position

Title: Senior Research Scientist, Marine Geology Division

Organization: Instituto Geológico y Minero de España (Spanish Geological Survey — IGME)

Academic qualifications

1989 Ph.D. cum laude in Geological Science (Geodynamics and Geophysics), Complutense University of Madrid

1982 B.Sc. in Geological Science, Complutense University of Madrid

Work experience

1994-2012 Research Scientist, IGME, Madrid, Spain

2001-2002 Associate Professor of Geology, Autonomous University of Madrid, Spain

1992-1994 Professor of Geophysics and Geomorphology, University of Salamanca, Spain

1989-1992 Oceanographer, Spanish Institute for Oceanography (IEO), Malaga, Spain

1988-1989 Research fellowship, Durham University, United Kingdom

Professional activities related to delineation of the Continental Shelf

2004-2012 Senior adviser for law of the sea: in charge of high-level coordination and strategic scientific assessment at the Ministry of Foreign Affairs and Cooperation related to Spain's submissions on the outer limits of its extended continental shelf and to negotiations on maritime limits with neighbouring countries: data collection and processing; article 76 analyses; determination of the foot of the continental slope and 1 per cent sediment thickness points.

2010-2011 Member of the Spanish delegation at the informal negotiations with Ireland, France and the United Kingdom on the internal distribution between the four coastal States of the FISU (France-Ireland-Spain-United Kingdom) area of the extended continental shelf in the Bay of Biscay and the Celtic Sea.

2009 In charge of scientific and technical aspects of the preparation of the preliminary report on the outer limits of the continental shelf

beyond 200 nautical miles submitted to the Commission on the Limits of the Continental Shelf (CLCS) pursuant to decision SPLOS/183, regarding the Spanish continental shelf west of the Canary Islands.

2009 — Scientific and technical head of the Spanish delegation to CLCS for the formal presentation of Spain's submission on its extended continental shelf in the area of Galicia (item 17, CLCS/66), United Nations Headquarters, New York, 7 April 2009.

2008 — International adviser to the United Nations Development Programme (UNDP) on the delimitation of the outer limits of the Argentine continental shelf pursuant to article 76 of the United Nations Convention on the Law of the Sea; Argentine Commission on the Outer Limits of the Continental Shelf (COPLA) and the Ministry of Foreign Affairs and Worship, Buenos Aires, Argentina, 28 November-12 December 2008.

2006-2009 — Scientific and technical head of the Spanish delegation to CLCS for the joint FISU submission to the CLCS plenary by France, Ireland, Spain and the United Kingdom on the delimitation of the continental shelf in the Celtic Sea and the Bay of Biscay and to the Subcommission established for consideration of the joint submission at the twentieth, twenty-first and twenty-second sessions of CLCS. Final recommendations on the FISU proposal were adopted by CLCS in March 2009 at its twenty-third session (CLCS/62).

Lectures and presentations related to the United Nations Convention for the Law of Sea

2011 — International workshop on sharing experiences in the delineation of the outer limit of the continental shelf, Buenos Aires, Argentina, 12-14 October 2011

2011 — Invited lecturer, speaking on the topic: "Potential environmental risks from the reduction of international maritime areas in polar oceanic areas: the Arctic and Antarctica"; international workshop on the protection of the environment in international areas, Baeza, Spain, 7-9 November 2011.

2010 — International workshop on "The New Frontier: the exploration and development of mineral resources in the Area: a challenge for the international community", Areces Foundation, Madrid, February 2010; invited lecturer, speaking on the topic: "Geo-scientific infrastructure and mineral prospecting in the Spanish seabed and its subsoil".

2010 — International capacity-building workshop on "Methods of exploring the continental shelf consistent with the United Nations Convention on the Law of the Sea: case of the Dominican Republic": scientific and technical workshop for experts from the Dominican Republic, IGME, Madrid, Spain.

2009 — Presentation on "Extension of the Spanish continental shelf in the bay of Biscay and the Celtic Sea pursuant to article 72 of the United

Nations Convention on the Law of the Sea (1982)" at the Sixth Symposium on the Iberian Atlantic Continental Margin, 1-5 December 2009, Oviedo. Symposium Proceedings, pp. 209-212.

2009 Presentation on "Extension of the Spanish continental shelf in the Galicia margin pursuant to article 72 of the United Nations Convention on the Law of the Sea (1982)" at the Sixth Symposium on the Iberian Atlantic Continental Margin, 1-5 December 2009, Oviedo. Symposium Proceedings, pp. 213-216.

2008 International workshop on the International Seabed Authority, Madrid, 17 April 2008. Invited lecturer, speaking on the topic: "Recent marine geological research at IGME: mud volcanoes, carbonate chimneys and polymetallic nodules".

2007 Invited lecturer, speaking on the topic: "Scope for invoking evidence contrary to the general rule for the determination of the foot of the continental slope: case of Argentina", at the workshop on geological features in the Argentine margin and their implications for article 76 of the United Nations Convention on the Law of the Sea, Buenos Aires, 8-10 October 2007.

2007 Invited lecturer, speaking on the topic: "Determination of the foot of the continental slope by use of evidence contrary to the general rule, paragraph 4 (b) of article 76", at the workshop on geological features in the Argentine margin and their implications for article 76 of the United Nations Convention on the Law of the Sea, Buenos Aires, 8-10 October 2007.

Technical reports and publications related to delineation of the continental shelf

2009 "Preliminary report on the preparation, pursuant to decision SPLOS/183, of the partial submission on the outer limits of the Spanish continental shelf in the area west of the Canary Island", published on the CLCS web page: http://www.un.org/Depts/los/clcs_new/submissions_files/preliminary/esp_can_2009_preliminary info.pdf (in Spanish)

2009 "Partial submission on the limits of the Spanish continental shelf pursuant to article 76 and Annex II of the United Nations Convention on the Law of the Sea in respect of the area of Galicia". Scientific and technical report and executive summary. Executive summary published on the CLCS web page: http://www.un.org/Depts/los/clcs_new/submissions_files/submission_esp_47_2009.htm

2007 "Description of geological and oceanographic aspects relating to the extension of the continental shelf of the Argentine Republic in accordance with the United Nations Convention on the Law of the Sea". Report on United Nations Development Programme (UNDP) project ARG/06/018. (in Spanish)

2006 "Joint submission to the Commission on the Limits of the Continental Shelf pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea (1982) in respect of the area of the Celtic Sea and the Bay of Biscay". Scientific and

technical report. Executive summary published on the CLCS web page: http://www.un.org/depts/los/clcs_new/submissions_files/frgbires06/joint_submission_executive_summary_english.pdf.

Experience of international oceanographic expeditions

1989-2011 Participated in more than 37 marine geoscientific expeditions aboard national and international vessels: R/V Sonne (Germany), Urania (Italy), Prof. Logachev (Russian Federation) and L'Atalante (France).

1992-2008 Participated in six Antarctic marine expeditions during the austral summers of 1992, 1998, 1999, 2001, 2004 and 2008, aboard R/V Hesperides, conducting marine geophysical studies of the Scotia Sea, Weddell Sea, Antarctic Peninsula, Bransfield Strait, Belinghausen Sea and Drake Passage.

2001-2011 Chief scientist on nine geoscientific marine expeditions aboard R/V Hesperides and Sarmiento de Gamboa (Spain) and L'Atalante (IFREMER, France), conducting geophysical, multibeam bathymetric and sampling studies of the seabed and its subsoil in the Gulf of Cadiz, off the shore of Morocco, the Mediterranean Sea, the Galician shore, the Bay of Biscay and the Canary Islands.

Experience as chief scientist on oceanographic expeditions for the delimitation of the continental shelf

2011 Chief scientist on the Gaire cruise for the delimitation of the Spanish continental shelf beyond 200 nautical miles to the west of the Canary Islands: multichannel seismic reflection, multibeam bathymetry, high resolution parametric echo-sounding and gravimetry; R/V Sarmiento de Gamboa, December 2011.

2010 Chief-scientist on the Garoe cruise for the delimitation of the Spanish continental shelf beyond 200 nautical miles to the west of the Canary Islands: multibeam bathymetry, high resolution parametric echo-sounding, gravimetry and magnetometry; R/V Hesperides, August 2010.

2007 Chief scientist on the Espor, a joint Spanish-Portuguese cruise for the delimitation of the continental shelf beyond 200 nautical miles in the area of the Galicia Bank: multichannel seismic reflection, ocean bottom seismographs (OBS), multibeam bathymetry, high resolution parametric echo-sounding and gravimetry; R/V Hesperides, May 2007.

2005 Chief scientist on the Breogham cruise, a joint venture with France, Ireland and the United Kingdom, carried out for the delimitation of the continental shelf beyond 200 nautical miles in the areas of Galicia, the Bay of Biscay and the Celtic Sea: multichannel seismic reflection, multibeam bathymetry, high resolution parametric echo-sounding and rock sampling; R/V Hesperides, September 2005.

Committee membership

2010-2012	Spanish delegate to the Management Committee of the European Cooperation in Science and Technology (COST) framework on long-term monitoring of permafrost and gas hydrate related methane release in the Arctic and impact on climate change (PERGAMON) action
2011-2012	Spanish delegate to the Marine Geology Expert Group of the Association of European Geological Surveys (EuroGeoSurveys)
2009-2012	Member of the Spanish scientific committee for the Integrated Ocean Drilling Programme (IODP) as part of the European Consortium for Ocean Research Drilling (ECORD)
2008-2012	Member of the European Science Foundation (ESF) Pool of Reviewers
2009-2012	Member of the Earth Sciences Committee of the Spanish National Assessment and Forecasting Agency (ANEP)

Publications

Author of more than 75 publications in international journals ranked on the Science Citation Index (SCI) and of some 125 contributions on marine-related topics to international congresses (complete list available upon request). Main topics: marine and coastal geomorphology, sedimentary processes on the continental shelf and slope, tectonics and geodynamics of passive and active continental margins, submarine mineral deposits and gas hydrates, GIS mapping. Notable publications include:

Leon, R., and L. Somoza (2011). GIS-based mapping for marine geohazards in seabed fluid leakage areas (Gulf of Cadiz, Spain). *Marine Geophysical Research* 32: 1-2: 207-223.

Magalhães, V. H., L. M. Pinheiro, M. K. Ivanov, E. Kozlova, V. Blinova, J. Kolganova, C. Vasconcelos, J. McKenzie, S. M. Bernasconi, A. J. Kopf, V. Díaz-del-Río, F. J. González and L. Somoza (2011). Formation processes of methane-derived authigenic carbonates from the Gulf of Cadiz. *Sedimentary Geology* 243-244, 1: 155-168

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Hernández-Molina F. J., M. Paterlini, R. Violante, P. Marshall, M. de Isasi, L. Somoza and M. Rebesco (2009). Contourite depositional system on the Argentine Slope: An exceptional record of the influence of Antarctic water masses. *Geology* 2009; 37; 507-510. doi:10.1130/G25578A.

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Diez, S., E. Gràcia, M. A. Gutscher, L. M. Matias, T. Mulder, P. Terrinha, L. Somoza, N. Zitellini, G. de Alteriis, J. P. Henriet and J. J. Dañobeittia (2005). Bathymetric Map of the Gulf of Cadiz, NE Atlantic Ocean: The SWIM Multibeam Compilation. *Anniversary of the Lisbon Earthquake*, International Conference Proceedings pp. 601-602

Maldonado, A., A. Barnolas, F. Bohoyo, C. Escutia, J. Galindo-Zaldivar, J. Hernandez-Molina, A. Jabaloy, F. J. Lobo, C. H. Nelson, J. Rodriguez-Fernandez, L. Somoza and J. T. Vazquez (2005). Miocene to recent contourite drifts development in the northern Weddell Sea (Antarctica). *Global and Planetary Change* 45 (1-3): 99-129

Somoza, L., R. León, T. Medialdea, G. Ercilla, A. Maestro, D. Casas, M. Farrán, E. Llave, F. J. Hernández-Molina and M. C. Fernández-Puga (2005). Is it possible to detect deepwater oil spills using multibeam acoustic response? *Vertimar-2005 Symposium on marine accidental Oil Spills*. Abstracts book. Vigo (Spain) July 2005. pp. 45-46.

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Medialdea, T., R. Vegas, L. Somoza, J. T. Vázquez, A. Maldonado, V. Díaz-del-Río, A. Maestro, D. Córdoba and M. C. Fernández-Puga (2004). Structure and evolution of the "Olistostrome" complex of the Gibraltar Arc in the Gulf of Cádiz (eastern Central Atlantic): evidence from two long seismic cross-sections. *Marine Geology* 209, 1-4, 173-19

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Pinheiro, L.M., M. K. Ivanov, A. Sautkin, G. Akhmanov, V. H. Magalhaes, A. Volkonskaya, J. H. Monteiro, L. Somoza, J. Gardner, N. Hamouni and M. R. Cunha (2003). Mud volcanism in the Gulf of Cadiz: results from the TTR-10 cruise. *Marine Geology* 195 (1-4): 131-151.

Somoza, L., V. Diaz-del-Rio, R. Leon, M. Ivanov, M. C. Fernandez-Puga, J. M. Gardner, F. J. Hernandez-Molina, L. M. Pinheiro, J. Rodero, A. Lobato, A. Maestro, J. T. Vazquez, T. Medialdea and L. M. Fernandez-Salas (2003). Seabed morphology and hydrocarbon seepage in the Gulf of Cadiz mud volcano area: Acoustic imagery, multibeam and ultra-high resolution seismic data. *Marine Geology* 195 (1-4): 153-176.

Hernandez-Molina, J., E. Llave, L. Somoza, M. C. Fernandez-Puga, A. Maestro, R. Leon, T. Medialdea, A. Barnolas, M. Garcia, V. D. del Rio, L. M. Fernandez-Salas, J. T. Vazquez, F. Lobo, J. M. A. Dias, J. Rodero and J. Gardner (2003). Looking for clues to paleoceanographic imprints: A diagnosis of the Gulf of Cadiz contourite depositional systems. *Geology* 31 (1): 19-22.

Stow, D. A. V., J. C. Faugeres, E. Gonthier, M. Cremer, E. Llave, F. J. Hernández-Molina, L. Somoza and V. Díaz-del-Río. Faro-Albufeira drift complex, northern Gulf of Cadiz. (2002). *Deep-Water Contourites: Modern Drifts and Ancient Series, Seismic and Sedimentary Characteristics*. Geological Society, London, Memoir 22, pp. 137-154.

Lobo, F. J., F. J. Hernandez-Molina, L. Somoza, V. D. del Rio and J. M. A. Dias (2002). Stratigraphic evidence of an upper Pleistocene TST to HST complex on the Gulf of Cadiz continental shelf (south-west Iberian Peninsula). *Geo-Marine Letters* 22 (2): 95-107.

Hernandez-Molina, F. J., L. Somoza, J. T. Vazquez, F. Lobo, M. C. Fernandez-Puga, E. Llave and V. Diaz-del Rio (2002). Quaternary stratigraphic stacking patterns on the continental shelves of the southern Iberian Peninsula: their relationship with global climate and palaeoceanographic changes. *Quaternary International* 92: 5-23.

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Battista, B. M., A. Lowrie, V. Makarov, S. J. Moffett and L. Somoza (2000). Lateral tectonics in the Gulf of Mexico, Gulf of Cadiz, and the Middle America Trench: Impacts on hydrocarbon accumulations. In: *Deep-Water Structure and Stratigraphy as a Paired Process/Response System*, Annual Meeting Expanded Abstracts — American Association of Petroleum Geologists, p. 11. American Association of Petroleum Geologists and Society of Economic Paleontologists and Mineralogists (AAPG). Tulsa, Oklahoma, United States of America.

Lowrie, A., L. Somoza and S. Moffet (2000). Thermal maturity in the Gulf of Cadiz due to mantle plumes, triple junctions and plate tectonics. *Offshore Technology Conference* OTC#12202. Dallas, Texas, United States of America.

Maldonado, A., J. C. Balanya, A. Barnolas, J. Galindo-Zaldivar, J. Hernandez, A. Jabaloy, R. Livermore, J. M. Martinez-Martinez, J. Rodriguez-Fernandez, C. S. de Galdeano, L. Somoza, E. Surinach and C. Viseras (2000). Tectonics of an extinct ridge-transform intersection, Drake Passage (Antarctica). *Marine Geophysical Researches* 21 (1-2): 43-68.

Livermore, R., J. C. Balanya, A. Maldonado, J. M. Martinez, J. Rodriguez-Fernandez, C. S. de Galdeano, J. G. Zaldivar, A. Jabaloy, A. Barnolas, L. Somoza, J. Hernandez-Molina, E. Surinach and C. Viseras (2000). Autopsy on a dead spreading center: the Phoenix Ridge, Drake Passage, Antarctica. *Geology* 28 (7): 607-610.

Maldonado, A., L. Somoza and L. Pallares (1999). The Betic orogen and the Iberian-African boundary in the Gulf of Cadiz: geological evolution (central North Atlantic). *Marine Geology* 155 (1-2): 9-43.

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Somoza, L., F. J. Hernandez-Molina, J. R. DeAndres and J. Rey (1997). Continental shelf architecture and sea level cycles: Late quaternary high-resolution stratigraphy of the Gulf of Cadiz, Spain. *Geo-Marine Letters* 17 (2): 133-139.

Hernandez-Molina, F. J., L. Somoza and J. Rey (1996). Late Pleistocene-Holocene High Resolution sequence analysis on the Alboran Sea Continental shelf. 1996. *Geology of Siliciclastic Shelf Seas*. Special Publication Geological Society, London, Oxford (UK), 117: 139-154.

Hernandez-Molina, F. J., L. Somoza, J. Rey and L. Pomar (1994). Late Pleistocene-Holocene sediments on the Spanish Continental Shelves — model for very high-resolution sequence stratigraphy. *Marine Geology* 120 (3-4): 129-174.

Nguyen Nhu Trung (Viet Nam)

Personal:

Date of birth: 8 February 1963

Place of birth: Hanoi

Gender: Male

Current work:

Principle scientific researcher, Head of Department of Geo-magnetic and Geo-electricity, Institute of Marine Geology & Geophysics, Vietnam Academy of Science & Technology.

Education

Bachelor of geophysics, Department of Petroleum, Hanoi University of Mining and Geology, 1981-1986

Doctor of Philosophy in Geology and Geography (major in geophysics), Department of Petroleum, Hanoi University of Mining and Geology, 1995-1997.

Post-doctor, Korea University, Republic of Korea, 1999-2000

Languages

Vietnamese: mother tongue

English: excellent

Russian: fair

Working experience

From 2011 to now:

Institute of Marine Geology and Geophysics,

Vietnamese Academy of Science and Technology

Position: Head of Department of Geomagnetic and Geo-electricity. Principle scientific researcher

Duties:

Manage the operation of the research lab.

Propose and develop new projects of the investigation of marine geology and coastal zone environment. Carry out the scientific research projects. Analysis and interpretation of geophysical data.

From 2009 to 2011:

Coordinating Committee for Geoscience Programmes in East and Southeast Asia.

Position:

Geo-Resources sector Coordinator

Duties:

Assist the Director in marketing, developing new projects and activities, and finding the resources to implement them

Coordinate with Member Countries' sector and programme experts in identifying Member Countries' needs; implementing the technical activities; promoting transfer and exchange of knowledge, expertise and best practices; and furthering advanced geoscientific knowledge and excellence within CCOP.

Assist in institutional capacity building and human resource development in CCOP Member Countries.

Formulate sector and programme strategies, develop work plans and budget as part of the CCOP Business Plan.

Assist in organizing and conducting training, workshop, seminar, and other activities.

Coordinate, monitor and assist in implementing plans and project activities.

Prepare reports of technical activities and make recommendations for continuous improvements.

Oversee the preparation of recurrent reports of the Technical Secretariat, e.g. Reports to the Steering Committee, Annual Session, Annual Reports, etc., and edit it to maintain a high standard of publication.

Undertake other assignments as may be given by the Director in connection with CCOP technical and management work

From 2000 to 2009:

Institute of Marine Geology and Geophysics,

Vietnamese Academy of Science and Technology.

Position:

Principle scientific researcher

Duties:

Propose and develop new projects of the investigation of marine geology and coastal zone environment.

Carry out the scientific research projects.

Analysis and interpretation of geophysical data.

From 1999 to 2000:

Korea University, Republic of Korea

Position:

Post-doctor

Duties:

Analysis and interpretation of satellite gravity data for investigation of characteristics of geology structures and tectonic of the East Vietnam Sea.

From 1998 to 1999:

Hanoi Institute of Oceanography, National Center for Natural Science and Technology.

Position

Senior scientific researcher.

Duties

Carry out the scientific research project.

Analysis and interpretation of Marine geophysics data.

From 1996 to 1998:

State Security Commission.

Position:

Deputy manager, International Affair department.

Duties

In charge in bilateral International affair

From 1993 to 1996:

Hanoi Institute of Oceanography, National Center for Natural Science and Technology.

Position

Senior scientific researcher

Duties

Carry out the scientific research project.

Analysis and interpretation of potential field and geoelectric data for mineral resources, underground water, geology structure, marine tectonics and geo-environment.

From 1987 to 1993:

Institute of Geology, Vietnamese Institute of Natural Sciences.

Position

Assistant researcher

Duties

Assist for senior and principle researchers

Major Projects involved

Title:

Investigating crustal structure of the Middle Sea of Vietnam based on Gravity and Magnetic data interpretation. Project No. 718806. 2006-2008

Position:

Director of the project

Title:

Evaluating the actual state and forecasting the saltwater intrusion of groundwater along coastal of Thaibinh Province. 2006-2007.

Position:

Director of the project

Title:

Improving the interpretation methods of gravity data for investigating East Sea structures. Project No. 73.34.04, 2004-2005.

Position:

Director of the project

Title:

Applying the electrical resistivity method on investigating groundwater and saltwater intrusion in coastal zone and islands: Case study of Haiphong, and CatBa, 2004-2005.

Position:

Director of the project

Title:

The effective of using satellite gravity data for investigating the structure and tectonic of the East Sea. Project No. 730302, 2002-2003.

Position:

Director of the project

Title:

Applying the advanced electrical method for investigating and determining the groundwater sources in Son La. 1994-1995.

Position:

Director of the project

Title:

Investigating in the geological structure and geodynamics for evaluating the petroleum potential in the deep sea and remote area of Vietnam. Project No.: KC-09-06, Vietnam Petroleum Institute, Petrovietnam.

Position:

Manager of a branch of the project

Title:

Establishing the atlas of the basic characteristics of natural and environmental conditions of Vietnamese Sea and adjacent. Project No. KC-09-02

Position:

Manager of a branch of the project

Major Publications:

Nguyen Nhu Trung, 2012, The gas hydrate potential in the South China Sea, Journal of Petroleum Science and Engineering. DOI: 10.1016/J.petrol.2012.01.007

Nguyen Nhu Trung and Nguyen Thi Thu Huong, 2012, Topography of the Crust-Mantle Boundary Beneath the East Sea From 3D Gravity Inversed Interpretation. Acta Geophysica. Under review.

Nguyen Nhu Trung and Nguyen Thi Thu Huong, 2010, Basement structure of Phukhanh basin, Vietnam, from 3D inversion method supplemented by magnetic data. Advances in Geosciences. P 257-272.

Nguyen Nhu Trung and Nguyen Thi Thu Huong, 2008. Determining rapidly basement structure by 3D gravity and magnetic inversion methods: application to Phukhanh Basin. Proceeding of conference on "Vietnam Petroleum Institute: 30 years of Development and integration", Science and Techniques publishing House Hanoi, pp. 155-166 (in Vietnamese).

Nguyen Nhu Trung 2007. Estimating the density contract in Bouguer correction in Middle Sea of Vietnam. Journal of Petroleum, No. 2, P. 22-32 (in Vietnamese).

Nguyen Nhu Trung and Nguyen Thi Thu Huong, 2006. Predicting the Moho depth of the East Sea from satellite gravity anomaly. Journal of Marine Science and Technology, Vol. 2, p. 31-42 (in Vietnamese).

Nguyen Nhu Trung, Nguyen Thi Thu Huong, 2005, Crustal structure of Vietnam continental margin from the potential anomalies: their correlation with oil and gas distribution. PetroVietnam Review pp. 21-31 (in English).

Nguyen Nhu Trung, N. B. Minh, N. V. Nghia, 2005, Using electrical resistivity and hydrogeology modeling for investigating saltwater intrusion in Haiphong coastal plain. Proceeding of International Workshop Hanoi Geo-engineering, Integrated Geo-engineering for a Sustainable Infrastructure Development, pp. 171-178 (in English).

Nguyen Nhu Trung, Nguyen Thi Thu Huong, 2004, Determining Moho depth of the East Sea by 3D inversion problem of satellite gravity. Proceeding of Conference of the 16th Universal of University of Mining and Geology, pp. 159-165.

Nguyen Nhu Trung, Nguyen Thi Thu Huong, 2004. Moho structure of the South China Sea based on 3D direct gravity inversion: implication for isostatic equilibrium state. Journal of Geology, Vol. A, No. 285, pp. 161-176 (in Vietnamese).

Nguyen Nhu Trung and Nguyen Thi Thu Huong, 2004, Rapid calculation of the topography of basin basement based on direct 3D gravity inversion. Journal of Earth Sciences, Journal of Earth Sciences, No. 3, pp (in Vietnamese).

Nguyen Nhu Trung, Nguyen Thi Thu Huong, 2004, Crustal structures of the East Sea from satellite gravity anomalies and deep seismic data. PetroVietnam Review, p. 9-23 (in English).

Nguyen Nhu Trung, Sang-Mook Lee, B.C. Que, 2004 — Satellite gravity anomalies and their correlation with the major tectonic features in the South China Sea. Gondwana Research, Vol. 7, No. 2 pp. 407-424 (in English).

Nguyen Nhu Trung, Nguyen Thi Thu Huong, 2003, Satellite gravity anomalies of the East Sea and adjacency. Contribution of Marine Geology and Geophysics, Vol. 7, pp. 147-160 (in Vietnamese).

Nguyen Nhu Trung, N.H. Hoang, N.T Huong, P. H. Hai, 2002. Characteristic of the crustal structure in the Truongsa Archipelago from satellite gravity data. Journal of Earth Science, vol.24, No. 2 (in Vietnamese).

Nguyen Nhu Trung, B.C. Que, S.M. Lee, S.J. Doh, 2001 — Tectonic elements of the SCS from combined Seismic and satellite gravity data. International Geosciences Journal, Gondwana Research, V4, No.4 (in English).

Nguyen Nhu Trung, B.C. Que, Sang Mook Lee, Sang-Jae Doh, 2001 — Tectonic features in the Eastern Sea Basin from satellite gravity data. Advances in Natural Sciences, Vol.2, No.2, 99-114 (in English).

Nguyen Nhu Trung, 1999, Field survey and interpretation procedure of 2D electrical method, Journal of Earth Sciences, Vol. 4, T21, pp. 254-262.

Nguyen Nhu Trung and Doan Van Tuyen, 1995. Non-symmetrical Dipole-dipole configuration. Journal of Geology, Vol. A, No. 226, pp. 19-28 (in Vietnamese).

Nguyen Nhu Trung, 1995. Some features of apparent resistivity pseudo section in inhomogeneous medium. Contribution on Marine Geology and Geophysics, Vol. 3, pp. 194-201 (in Vietnamese).

Presentations in International scientific Conferences/Workshops

Nguyen Nhu Trung, B.C. Que, S.M. Lee, S.J. Doh 2000, Investigation of Crustal structures in the SCS using satellite gravity anomalies. The 55th Korea Geology Conference, Taejon.

Nguyen Nhu Trung, B.C. Que, S.M. Lee, S.J. Doh, 2001 -- Tectonic elements of the SCS from combined Seismic and satellite gravity data. International Symposium on Rodinia, Gondwana and Asia, in Osaka, Japan, 2001

Nguyen Nhu Trung, Nguyen Thi Thu Huong, Crustal structure of the East Sea from updated deep seismic and satellite gravity data.. First Joint symposium on Marine Science between KIOS/PKNU (Korea) and HIO/HUMG (VN), 2003.

Nguyen Nhu Trung, Nguyen ba Minh, Nguyen Van Nghia, 2005, Using electrical resistivity and hydrogeology modeling for investigating saltwater intrusion in Haiphong coastal plain. The 3rd International Workshop, Hanoi Geoengineering 2005.

Nguyen Nhu Trung, Nguyen Thi Thu Huong, Crustal structure of Vietnam continental margin from the potential anomalies: their correlation with oil and gas distribution. International Workshop on Application of remote sensing, SIG, GPS for reduction of natural risks and durable development, 2006

Tetsuro Urabe (Japan)

Date and place of birth: 10 January 1949, Okayama, Japan

Education:

Ph.D., University of Tokyo, 1976, Geology

M.S., University of Tokyo, 1973, Geology

B.S., University of Tokyo, 1971, Geology and Mineralogy

Current Positions:

2011-present	Member, Commission on the Limits of the Continental Shelf
2008-present	Vice Executive Director, Ocean Alliance, University of Tokyo
2007-present	Adjunct Professor, University of The Air
2000-present	Professor, Department of Earth and Planetary Science, University of Tokyo

Professional Experience:

2006-2007	Chair, Department of Earth and Planetary Science, University of Tokyo
1996-2000	Chief Geologist, Geological Survey of Japan (GSJ)*
1992-1996	Chief, Experimental Mineralogy Section, GSJ
1990-1991	Deputy Director, Research Planning Office, GSJ
1985-1992	Senior Research Geologist, GSJ
1979-1981	Visiting Researcher, Department of Geology, University of Toronto, Canada
1976-1985	Assistant Professor, Geological Institute, University of Tokyo

(*Geological Survey of Japan (GSJ), Agency of Industrial Science and Technology, Ministry of International Trade and Industry of Japan: GSJ was reorganized in 2001 into AIST (National Institute of Advanced Industrial Science and Technology).)

Research Activities:

My current research interests are mainly focused on: (1) the seafloor hydrothermal activities both on the mid-ocean ridge and the arc-backarc systems; (2) the massive sulfide deposits related to hydrothermal activity and the ferromanganese crust deposits as deep-sea mineral resources; (3) the microbial geochemistry of the subseafloor biosphere; (4) the geochemical cycle within and from the hydrothermal systems; and (5) the "rare-metal" mineral resources on land and seafloor. I have led and continue to lead many major sea-going research projects, including: (1) Japan-France-SOPAC *STARMER Project* (1987-1991) on the tectonics and hydrothermal activity in the North Fiji Basin; (2) Japan-US *RidgeFlux Project* (1993-1998) on hydrothermal intensity on the super-fast-spreading East Pacific Rise; (3) *Archean Park Project* (2000-2006) on the deep biosphere related to seafloor hydrothermal

activity, and (4) the current *TAIGA Project* (2008-2012; http://www-gbs.eps.s.u-tokyo.ac.jp/~taiga/en/ index.html).

Research Cruise Experience:

(* As Principal Investigator or Co-Principal Investigator)

May 2011	**R/V Hakureimaru* No. 2/BMS cruise to Okinawa Trough, Japan (TAIGA Project)
June 2010	**R/V Hakureimaru* No. 2/BMS cruise to Southern Mariana Trough (TAIGA Project)
February 2009	**R/V Natshushima/ROV Hyper Dolphin* cruise to Takuyo-Daigo Seamount, northwestern Pacific (JAMSTEC cruise)
June 2004	**R/V JOIDES Resolution* Leg 301 of IODP (Integrated Ocean Drilling Program) to Juan de Fuca Ridge, northeastern Pacific
January 2004	**R/V Hakureimaru* No. 2/BMS cruise to Southern Mariana Trough, northwest Pacific (Archaean Park Project)
July 2002	**R/V Hakureimaru* No. 2/BMS drilling cruise to Izu-Bonin (Archaean Park Project)
June 2001	*R/V Hakureimaru* No. 2/BMS (*tethered marine drill*) drilling cruise to Izu-Bonin Arc, Japan (Japan-US)
September 1998	**R/V YOKOSUKA/SHINKAI 6500*** submersible cruise to East Pacific Rise (EPR) (Japan-US)
October 1995	**R/V YOKOSUKA SHINKAI 6500* cruise to Papua New Guinea (Japan-PNG-SOPAC)
September 1994	**R/V YOKOSUKA/SHINKAI 6500* submersible cruise to EPR (Japan-US)
November 1993	**R/V Melville* cruise to southern EPR (Japan-US Ridge-Flux project)
December 1991	**R/V Suroit/Cyana* submersible cruise to Vanuatu (Japan-France SOPAC STARMER Project)
August 1991	**R/V YOKOSUKA/SHINKAI 6500* submersible cruise to North Fiji Basin (Japan-France-SOPAC STARMER Project)
June 1989	*R/V Nadir/Nautile* submersible cruise to North Fiji Basin (Japan-France-SOPAC STARMER Project)
July 1987	*R/V Atlantis II/Alvin* submersible cruise to Izu-Bonin Arc, north-western Pacific (US-Japan cruise)
May 1986	*R/V Natsushima/SHINKAI 2000* submersible cruise to Izu-Bonin Arc, northwestern Pacific (GSJ cruise)
September 1985	*R/V Atlantis II/Alvin* submersible cruise to Galapagos Rift, off Ecuador (NOAA expedition)

June 1985	*R/V Nadir/Nautile* submersible cruise to Nankai Trough, Japan (Japan-France KAIKO Project)

(as well as 12 more cruises to eastern and western Pacific basin.)

(** DSV SHINKAI 6500: A manned research submersible vehicle of JAMSTEC (Japan Agency for Marine-Earth Science and Technology) with the greatest depth range of activity in the world. It can dive up to a depth of 6,500m.)

Professional Service Experiences:

2010-present	Affiliated Member, Science Council of Japan
2003-present	Member, Advisory Committee to the Cabinet for the Extension of the Continental Shelf, Japan
2006-present	Member and Chair of subcommittee, Advisory Committee for Natural Resources and Energy, Ministry of Economy, Trade and Industry, Japan
2008-2010	President, *Society of Resource Geology*
1993-1997	Member, Editorial Board, *Economic Geology*
1993-1995	Member, Editorial Board, *Mineralium Deposita*
1988-1990	Editor in Chief, *Mining Geology* (Tokyo)

Professional Associations:

The Society of Economic Geologists

American Geophysical Union

The Society of Resource Geology

The Geological Society of Japan

The Geographical Society of Japan

The Geochemical Society of Japan

The Society of Ocean Policy

Recent Selected Publications:

Kawada, Y., Seama, N., & Urabe, T. (2011) The role of seamounts in the transport of heat and fluids: Relations among seamount size, circulation patterns, and crustal heat flow. *Earth and Planetary Science Letters*, 306, 55-65.

Yanagawa, K., Sunamura, M., Lever, M. A., Morono, Y., Hiruta, A., Ishizaki, O., Matsumoto, R., Urabe, T., & Inagaki, F. (2011) Niche separation of methanotrophic Archaea (ANME-1 and -2) in methane-seep sediments of the Eastern Japan Sea offshore Joetsu. *Geomicrobiology Journal*, 28(2), 118-129 (DOI: 10.1080/01490451003709334).

Urabe, T., Okino, K., Sunamura, M., Ishibashi, J., Takai, K., & Suzuki, K. (2009) Trans-crustal advections and in-situ biogeochemical processes of global seafloor aquifer; the sub-seafloor TAIGA. *Journal of Geography*, 118(6), 1027-1036 (in Japanese with English abstract).

Mori, K., Yamaguchi, K., Sakiyama, Y., Urabe, T., & Suzuki, K. (2009) *Caldisericum exile* gen. nov., sp nov., an anaerobic, thermophilic, filamentous bacterium of a novel bacterial phylum, *Caldiserica* phyl. nov., originally called the candidate phylum OP5, and description of *Caldisericaceae* fam. nov., *Caldisericales* ord. nov and *Caldisericia* classis nov. *International Journal of Systematic and Evolutionary Microbiology*, 59, 2894-2898.

Kato, S., Yanagawa, K., Sunamura, M., Takano, Y., Ishibashi, J., Kakegawa, T., Utsumi, M., Yamanaka, T., Toki, T., Noguchi, T., Kobayashi, K., Moroi, A., Kimura, H., Kawarabayasi, Y., Marumo, K., Urabe, T., & Yamagishi, A. (2009b) Abundance of *Zetaproteobacteria* within crustal fluids in back-arc hydrothermal fields of the Southern Mariana Trough. *Environmental Microbiology*, doi:10.1111/j.1462-2920.2009. 02031.x.

Kato, S., Hara, K., Kasai, H., Teramura, T., Sunamura, M., Ishibashi, J., Kakegawa, T., Yamanaka, T., Kimura, H., Marumo, K., Urabe, T., & Yamagishi, A. (2009a) Spatial distribution, diversity and composition of bacterial communities in sub-seafloor fluids at a deep-sea hydrothermal field of the Suiyo Seamount. *Deep-Sea Research Part I*, 56(10), 1844-1855.

Yanagawa, K., Sunamura, M., Morono, Y., Futagami, T., de Beer, D., Urabe, T., Boetius, A., & Inagaki, F. (2009) Distribution of metabolically active microbial communities in CO2-rich marine sediments. *Geochimica et Cosmochimica Acta*, 73, A1472-A1472 (Abstract).

Urabe, T., Iizasa, K., & Ishibashi, J. (2009) The latest frontier of earth science and its application to mineral exploration: Submarine hydrothermal deposits as modern analogy. *Resource Geology, 59*(1), 43-72 (In Japanese with English abstract).

Mori, K, Sunamura, M., Yanagawa, K., Ishibashi, J., Miyoshi, Y., Iino, T., Suzuki, K., & Urabe, T. (2008) First cultivation and ecological investigation of a bacterium affiliated with the candidate phylum OP5 from hot springs. *Applied and Environmental Microbiology, 74*, 6223-6229.

Marumo, K., Urabe, T., Goto, A., Takano, Y., & Nakaseama, M. (2008) Mineralogy and isotope geochemistry of active submarine hydrothermal field at Suiyo Seamount, Izu-Bonin Arc, West Pacific Ocean. *Resource Geology*, 58, 220-248 (Best Article Award).

Urabe, T., Chiba, H., & Kato, Y. (2008) IMA Kobe 2006 Special Issue: Seafloor hydrothermal deposits of arc-backarc systems in western Pacific. *Resource Geology, 58*, 205 (Preface).

Mori, K., Maruyama, A., Urabe, T., Suzuki, K., & Hanada, S. (2008) *Archaeoglobus infectus* sp. nov. a novel thermophilic, chemolithoautotrophic archaeon isolated from a deep-sea rock collected at Suiyo Seamount, Izu-Bonin Arc, western Pacific Ocean. *International Journal of Systematic and Evolutionary Microbiology*, 58, 810-816.

Ishibashi, J., Marumo, K., Maruyama, A., & Urabe, T. (2007) Direct access to the sub-vent biosphere by shallow drilling. *Oceanography, 20*(1), 24-25.

Behrmann, J. H., Yang, J. & CoZone Working Group (2007) Convergent Plate Boundaries and Collision Zones. In: Harms, U., Koeberl, C., & Zoback, M. D., eds., *Continental Scientific Drilling: A Decade of Progress, and Challenges for the Future*. Springer, Heidelberg, pp. 289-334.

Kinoshita, M., Kawada Y., Tanaka A., & Urabe, T. (2006) Recharge/discharge interface of a secondary hydrothermal circulation in the Suiyo Seamount of the Izu-Bonin Arc, identified by submersible-operated heat flow measurements. *Earth and Planetary Science Letters, 245*, 498-508.

Takano, Y., Edazawa, Y., Kobayashi, K., Urabe, T., & Marumo, K. (2005) Evidence of sub-vent biosphere: enzymatic activities in 308 degrees C deep-sea hydrothermal systems at Suiyo Seamount, Izu-Bonin Arc, western Pacific Ocean. *Earth and Planetary Science Letters, 229*, 193-203.

Kuwabara, T., Minaba, M., Iwayama, Y., Inoue, I., Nakashima, M., Marumo, K., Maruyama, A., Sugai, A., Itoh, T., Ishibashi, J., Urabe, T., & Kamekura, M. (2005) *Thermococcus coalescens* sp. nov., a cell-fusing hyperthermophilic archaeon from Suiyo Seamount. *International Journal of Systematic and Evolutionary Microbiology*, 55, 2507-2514.

Hara, K., Kakegawa, T., Yamashiro, K., Maruyama, A., Ishibashi, J., Marumo, K., Urabe, T., & Yamagishi, A. (2005) Analysis of the Archaeal sub-seafloor community at Suiyo Seamount on the Izu-Bonin Arc. *Advances in Space Research*, 35(9), 1634-1642.

Fisher, A. T., Urabe, T., Klaus, A., & the IODP Expedition 301 Scientists (2005) IODP Expedition 301 installs three borehole crustal observatories, prepares for three-dimensional, cross-hole experiments in the northeastern Pacific Ocean. *Scientific Drilling*, 1(1), 6-11.